TOOL DIE MACHINE
PROGRESS
THE NATIONAL TOOL AND DIE JOURNAL

TOOLS, DIES, JIGS, FIXTURES, MOULDS, GAGES, MACHINES
Design and Engineering
PRECISION SPECIALTIES
STAMPING and PARTS PRODUCTION
Official Publication
Special Tool, Die & Machine Shop Industry

JUNE
1938

Circulation more than 11,000

LESS BREAKAGE
With WELDON End-Mills
Proven by Experience to be

Stronger—because of improved flute design and careful heat treatment.

Faster—No pockets in which chips can clog, permits faster speeds and feeds.

Exactingly Made—Highest standards of manufacture insure satisfactory performance and a minimum of breakage.

LET THE ENDMILL PROVE ITSELF!

Write Us

The WELDON TOOL CO.
3000 WOODHILL RD.
CLEVELAND, OHIO

Pioneers in Fast Spiral Double End End Mills

GRINDRITE
Efficiency Value Doubles and Redoubles

I

The Grindrite Heavy Duty Model has been made portable. Move it easily, quickly to the part of the shop where it can be most effectively and efficiently used.

Take Grindrite to the job . . . no need for workers' costly, time-consuming trips around the shop. Die fitting, production parts grinding, whatever the job, it can be done at the point of greatest convenience. There is real saving in this.

II

Grindrite has acquired a unique "helper," the Portable Try-out or Work Bench . . . same height, same size, same rugged construction. Equipped with a standard vise it is ideal for die fitting and parts assembly.

•

Grindrite has always done heavy grinding FASTER, and now:

This "Portable Grindrite Combination" saves additional time and money by being immediately available in any part of a shop.

Send for new descriptive circular.

KOESTLIN TOOL & DIE CORP.

3601 Humboldt Ave. Detroit, Mich.

Largest Independent Die Builder

Why not PROFIT by.. FCC PRODUCTS?

Modern FCC products and services have already brought substantial economies and better profits to many users in a widely varying range of industries. By failing to consider their possibilities for your own business you may be missing a good chance to improve service and profits. FCC specialties include:

COMPOSITE STEEL DIE SECTIONS — electrically welded and rolled

FORGINGS — rings, discs, blocks, bars, shafts, hubs and special shapes from —

High Speed Steels
Carbon Alloy Tool Steels
Stainless
Nitralloy
S.A.E. Steels
Copper

FCC AIR HARDENING and OIL HARDENING TOOL STEEL Cast to shape

No. 17 METAL RESISTANCE GRIDS

Write for the new FCC Catalog describing our products and services.

FCC

THE FORGING AND CASTING CORPORATION

FERNDALE · MICHIGAN

COMPOSITE STEEL DIES · TOOL STEEL CAST TO SHAPE
TOOL AND ALLOY STEEL FORGINGS · NITRI-CAST-IRON

DISTRIBUTORS:

BRACE-MUELLER-HUNTLEY, INC., Buffalo, N. Y., Rochester, N. Y., Syracuse, N. Y. . . . EDGCOMB STEEL CO., Philadelphia, Pa.; . . . LUDLUM STEEL CO., Chicago, Ill., Cleveland, Ohio, Los Angeles, Calif., Pittsburgh, Pa., St. Louis, Mo., Springfield, Mass., San Francisco, Calif. . . . EDGCOMB STEEL CORP., Newark, N. J. . . . MOORE-HANDLEY HARDWARE CO., Birmingham, Ala. . . . RUTLAND SUPPLY COMPANY, Rutland, Vt. . . . F. A. SEEGER, P. O. Box 1047, Atlanta, Ga.

When you order or write about products described in TDM PROGRESS please mention the publication.

TOOL DIE MACHINE
PROGRESS
THE NATIONAL TOOL AND DIE JOURNAL

Copyright 1938 by George J. Huebner

Published in the interest of Manufacturers and Users of
CUSTOM-BUILT TOOLS, DIES, MACHINES AND ACCESSORIES

GEORGE J. HUEBNER . . . *Publisher and Editor*
215 Fairmount-Cedar Bldg. - Cleveland, O.
W. M. Phares, Chicago District Representative, 1 North Crawford Ave., Chicago, Ill.

★

Official Organ of the
SPECIAL TOOL, DIE AND MACHINE SHOP INSTITUTE
A National Trade Association

President.....Frederick S. Blackall, Jr.
Vice-President.....N. A. Woodworth
Secretary-Treasurer.....George J. Huebner
215 Fairmount-Cedar Building
Cleveland, Ohio

Columbia
TOOL STEEL

With business at the reduced rate, Columbia is maintaining full stocks.

Also special material can be furnished with the usual promptness.

It pays to use Good Tool steel.

COLUMBIA TOOL STEEL COMPANY
GENERAL OFFICE AND WORKS
410 EAST 14TH. STREET • CHICAGO HEIGHTS, ILL.

Advertisers In This Issue

Acme Industrial Company 28
Ajax Steel & Forge Co. 27
Barth Stamping & Machine Works 44
Bissett Steel Company 31
Boyar-Schultz Corporation 27
Brown Tool Company 13
Bunell Machine & Tool Company ....24, 25 & 44
Carborundum Company 9
Chicago Wheel & Mfg. Co. 33
Cleveland Universal Jig Company 44
Colonial Bushings, Inc. 37
Columbia Tool Steel Co. 4
Continental Machine Specialties, Inc ..... Back Cover
Danly Machine Specialties, Inc 5
Davis Tool & Engineering Company 45
Denning Manufacturing Company ..... 39 & 44
Detroit Stamping Company 37
Enterprise Machine Parts Corp. .....20 & 45
Forging & Casting Corporation 3
Gear Specialties, Inc. 10
Gerstner Tool Chests 4
Grob Brothers 8
Grobet File Corp. of America 33
Hahn Manufacturing Company 44
Hamilton Tool Company .....31, 43 & 45
Holo Krome Screw Corp. 7
Hovis Screwlock Company 21
Industrial Machine Company 44
International Tool Company .....14, 15 & 45
Interstate Tool Company 45
Koestlin Tool & Die Corp. Inside Front Cover & 45
Lake Erie Forge & Machine Co. 23
Lincoln Tool & Die Co. 35
Lyons Machine Company.....36 & 44
Majestic Tool & Mfg. Co. 45
Master Chrome Service, Inc. 40
Maxwell, F. A., Company 6
McKinney Tool & Manufacturing Company .. 44
Modern Tool & Die Company 44
Northeastern Engineering Company 45
Ohio Tool Company 44
Overly-Hautz Company 36
Paramount Tool Company 44
Phoenix Ice Machine Company 41
Porter, Geo. H., Steel Treating Company 41
Precision Tool Company 10
Pressed Metals Engineering 27
Robbins, Omer E., Company .....43 & 45
Royal Oak Tool & Machine Company 45
Schraner, A. P., & Company 44
Sommer & Adams Co. ..Inside Back Cover & 44
Star Machine & Tool Company 45
Star Tool & Die Works 45
Strong, Carlisle & Hammond Co. 8
Swiss Boring Co. 41
Tool & Gages, Inc. 45
Ulmer, J. C., Company 45
Variety Machine & Stamping Company 45
Weldon Tool Company ..... Front Cover
Wheelock, Lovejoy & Company 39

MORE WORK - BETTER WORK

Machinists, Tool, Die and Pattern Makers will turn out more work of high quality, and do it more easily when their tools are given systematic care in a GERSTNER Chest. Help them choose from FREE CATALOG.

GERSTNER TOOL CHESTS
56 Columbia St., Dayton, Ohio

When you order or write about products described in TDM PROGRESS please mention the publication.

ACCURATE DOWEL PINS cost less than the time of the man who applies them—less than the job they do in production, hour after hour.

Included in the small cost of Danly Dowel Pins are the operations of hardening, grinding and individual inspection to maintain standards within ±1/10,000 of an inch.

The advantages are uniform straightness for the entire length so that the pin can be removed from its setting and driven back the reverse way. That also means that Danly Dowel Pins can be driven in or out of the holes without upsetting and without tearing or sticking. They are also available in .001" oversize for repair and renewal work, where holes have become enlarged in process or a reamer has cut oversize.

PRECISION PAYS. The sure way to secure it is to specify Danly Dowel Pins and all Die Makers' Supplies.

Danly Precision and Commercial Sets and Die Makers' Supplies F.O.B. from the 8 Danly Branch Office Stocks.

BRANCHES:

LONG ISLAND CITY, N. Y. . . . 36-12 34th STREET
DETROIT, MICHIGAN . . . . 1549 TEMPLE AVENUE
CLEVELAND, OHIO . . . 1745 ROCKWELL AVENUE
DAYTON, OHIO . . . 990 E. MONUMENT AVENUE
PHILADELPHIA, PA. . . . . 3913 N. BROAD STREET
ROCHESTER, N. Y. . . . . 16 COMMERCIAL STREET
MILWAUKEE, WIS., 513 EAST BUFFALO STREET

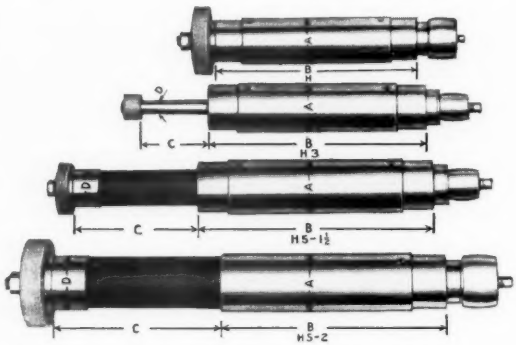
DANLY MACHINE SPECIALTIES, Inc., 2121 So. 52nd Ave., Chicago, Ill.

DANLY DIE MAKERS' SUPPLIES

When you order or write about products described in TDM PROGRESS please mention the publication.

ANY GRINDER IS *only as good as its spindle*

Accuracy, power, speed, long life — all depend on the spindle. That is why the Maxwell Grinder Spindle is being built differently—we call it *precision built.* You judge.



Each spindle has 'two pairs' of precision ball bearings. The pair at the pulley end are mounted on a bronze sleeve whose sliding fit on the shaft compensates for expansion, contraction and wear.

Regardless of temperature or wear, the four ball bearings—two pairs—are always perfectly seated and always under a predetermined load. The bearings are first lapped individually, then in pairs. Next the two pairs are assembled and finally they are lapped as a unit. There's our idea of precision and the result is incomparable spindle performance. Maxwell Spindles are adaptable to any grinding machine *AND THIS PERFORMANCE IS GUARANTEED.*

TYPE H MAXWELL UTILITY GRINDER

½ H.P. heavy duty, ball bearing motor—3450 r.p.m.—rubber mounted. Motor saddle pivots on single stud, is locked in any position by tightening stud nut thus regulating belt tension.

You may pay a lot more but no similar grinder can do more or better work . . . Our unconditional guarantee makes you the judge in your own shop.

New circular on request

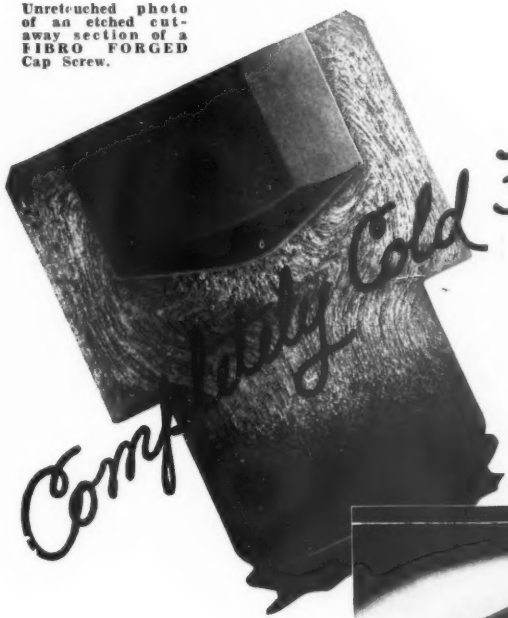
F. A. MAXWELL COMPANY

310 Broadway **Bedford, Ohio**

When you order or write about products described in TDM PROGRESS please mention the publication.

Not Drilled — Not Machined — Not Extruded to form the Socket!

Unretouched photo of an etched cut-away section of a FIBRO FORGED Cap Screw.



exclusively
HOLO-KROME

Realizing that the heart of a screw is the socket, Holo-Krome developed, patented and exclusively control the method whereby not only the exterior of the screw is forged but the actual socket, the side walls, the head, and every particle of the screw (threads excepted) is Completely Cold Forged.

THE HOLO-KROME SCREW CORP., Hartford, Conn.

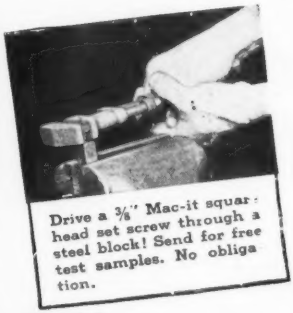
HOLO-KROME FIBRO FORGED

TRADE MARK

Socket Screws

SCREWS FOR TESTING SENT FREE

HOLO-KROME
FIBRO FORGED SCREWS . . . *Unfailing Performance* *Quality*



NO MORE BROKEN SCREWS

WHEN YOU STANDARDIZE ON MAC-ITS!

Troubled with broken screws, stripped threads or mushroomed points? Machining and heat-treating your own screws for tool posts and the like? Use stripper bolts, socket head cap screws, any kind of strong screws or studs?

Then save yourself time and money! Use Mac-its . . . 16 standard items, including new lock screws. Special screws to specifications.

FREE—Mac-it buyer's guide to only complete line. Send today for Catalog 3812. No obligation.

The Strong, Carlisle & Hammond Co.
1392 West Third St., Cleveland, O.

Mac-its PRONOUNCED "MACK-ITS"

THE ONLY COMPLETE LINE OF HEAT-TREATED, ALLOY SCREWS

MODERN DIE-MAKING MACHINES

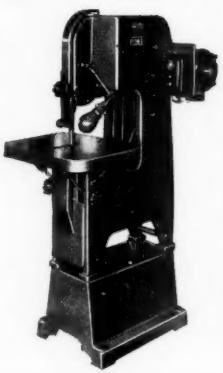
File Your Way to LOWER COSTS

with . . . GROB

CONTINUOUS MOTION **DIE-FILING MACHINES**

- SOLD SINCE 1930
- OVER 1000 IN USE
- BOUGHT ON ITS MERITS

A machine that will step up production . . . combine speed with accuracy . . . cut production costs . . . operate with ease and precision. It has every desirable feature for modern scientific die-making.



Pat. No. 1958477 RE 19999 Patents Pending

GROB BROTHERS
GRAFTON, WISCONSIN

When you order or write about products described in TDM PROGRESS please mention the publication.

REDUCE MACHINE MAINTENANCE COST

• Machine maintenance cost can be reduced easily with a smooth-running Aloxite Brand Aluminum Oxide Wheel. It is easy on machine spindles because it runs without vibration. It has straight, parallel sides . . . strong, sharp corners . . . and close arbor hole tolerances. Wheels without these features require expensive, wasteful truing when first mounted.

For lower machine maintenance costs —for faster, better work in your tool room, specify Carborundum-made Tool Room Wheels.

CARBORUNDUM
REG. U.S. PAT. OFF.
BRAND
ABRASIVE PRODUCTS

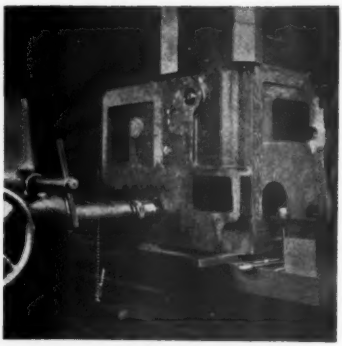
THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.
REG. U. S. PAT. OFF.

Sales Offices and Warehouses in New York, Chicago, Philadelphia, Detroit, Cleveland, Boston, Pittsburgh, Cincinnati, Grand Rapids

(Carborundum and Aloxite are registered trade-marks of The Carborundum Company)

When you order or write about products described in TDM PROGRESS please mention the publication.

ADJUSTABLE WHILE RUNNING!



Consider Your Horizontal Boring Mill!

Here is a typical Horizontal Boring Mill job calling for speed and accuracy. The machine is a 5″ bar Lucas, the tool equipment a Precision Universal Tool Head with No. 5 Morse shank. Body and shank are one integral chrome nickel steel forging, hardened and ground, giving ruggedness and stamina to take ¾″ of metal out of a 6″ hole at one pass. Precision construction gives instant adjustability to "tenths" for finishing cuts. This one Tool Head handles all holes from 1/16″ to 16″ diameter. Recessing, back-facing and undercutting operations not visible in illustration performed at same time without any special tooling or lost time. The Precision Universal Tool Head has been adopted by the following manufacturers of Horizontal Boring Mills in their own plants and is recommended by them as preferred adjustable tool equipment for their machines: Lucas Machine Tool Co., Gidding & Lewis Machine Tool Co., Wm. Sellers & Co. and Universal Boring Machine Co.

THE PRECISION UNIVERSAL TOOL HEAD

This outstanding tool brings all adjustments under absolute micrometric control of the operator at all times and all speeds WITHOUT STOPPING TOOL OR MACHINE. It is the fastest and most accurate boring tool in existence. But in addition to that, it also faces, counterbores, turns outside diameters, mills flat surfaces and slots, undercuts, recesses, back-faces, trepans and does an almost limitless range of "headache" jobs that are utterly impossible with wrench-adjusted "offset" boring heads because such older types of tools cannot be cross-fed or adjusted while running.

One size Precision Universal Tool Head bores all holes from 1/16″ to 16″ diameter and will pass through any hole where a 4″ bar will follow. Unsurpassed for internal threading.

Send for Interesting Bulletins and Additional Information.

THE PRECISION TOOL COMPANY, Bridgeport, Conn.

Tool • Die • Machine **PROGRESS**

The National Tool and Die Journal

June, 1938 **Vol. 4, No. 3**

An American Plan for Controlling Unemployment

★ ★ ★ ★ ★

WE have consistently refrained from political discussions in these pages. You probably agree there are enough of them and to spare in other media but this month we feel justified in breaking our rule to lay before you poignant facts and what seem to us, also, some very sensible suggestions.

First the facts as they are set forth by Dorothy Thompson in an excellent editorial entitled "Dictatorships",* appearing currently in the *Ladies' Home Journal:*

"It is impressive that Germany, with no money, with a deficiency of raw materials, with seventy-two million people living in a relatively small area, should be able to employ every able-bodied German. True, the wages are low; true, there is a shortage of fats, bad bread, strangulating regulation, suppression of women's work; true, that the whole people have been turned into one big army; true, also, that Germany lives as a parasite on the countries with free currencies, operating with all sorts of financial shenanigans which, if used by other nations, would eventually break Germany.

"Nobody in his senses wants to copy the German system. But millions of people accept it for no other reason than that they have work. And eventually millions in America will ask what is wrong in a country where there is every resource, twelve billion dollars in gold, and twelve million people out of work. The fact, if it continues, can break any social and economic system.

"We have got to face the fact that our present methods, even with a huge expenditure of public funds, do not solve the problem in any satisfactory way. Our made-work programs, instituted under WPA for emergency relief, do not solve it. The whole program began as an improvisation and retains all the marks of improvisation even when it threatens to become imbedded in our social system. The spectacle of millions of people working for subsistence wages on projects of doubtful social usefulness, as direct employees of the Federal Government, is not edifying whether you regard it politically or economically. Such a system tends to become a political vested interest to perpetuate one particular party or policy.

"But it can be liquidated only in favor of something better. The dole isn't the answer. This is an admission of defeat. Leaving everything to private enterprise isn't the answer either, unless private enterprise can guarantee to do away with the business cycle and promise no new depressions, and that private enterprise cannot do.

"But there is an answer, I believe; and, curiously enough, that answer has

*Reprinted by special permission from the *Ladies' Home Journal.* Copyright 1938 by The Curtis Publishing Company.

not been tried, although a few isolated voices have been crying in the wilderness in its behalf for several years. It consists in realistically accepting the fact that periods of unemployment occur at regular intervals in any free economic system, and planning a long-range non-political and *automatic* program of Government activity to take up the slack during these periods, and to release workers gradually, and also *automatically*, as the period passes.

"This would mean, first, that we create a means of taking a continuous census of unemployed, including only those persons who are able and willing to work, and leaving out of it "social cases" whose predicament is due to other causes than lack of work possibilities. Second, that we create a national board, completely divorced from politics, and coordinated with similar state planning bodies, who, looking several years ahead, would carefully prepare programs of really necessary and useful public works, the completion of which would be of benefit to the whole community. Third, that we create a flexible budget in which, in addition to appropriations for normal expenditures, we set aside contingent appropriations, to be used only if the regular and automatic census indicates that unemployment has passed a certain point that can be regarded as normal, and will be automatically withdrawn when the work is completed and when the register of employment has again risen to whatever point is agreed upon as normal. Such projects ought to be ones that can be completed in from three to nine months, so that they will automatically liquidate when they are finished, and not continue into a period of upturn when there is plenty of work for everybody.

"And we ought to plan to balance the budget over the business cycle. It is inevitable that we should go in for a great deal of Government spending as a supplement to private investment and activity in times of depression. But if we are to use this spending to keep an economic system based on private enterprise alive and vigorous, that spending must be done much more scientifically and according to plan than any we have done so far.

"The work must be such that it will not only put necessary money into empty pockets, but it will also furnish the heartiest possible stimulus to all manufacturing, including that of so-called durable goods.

"And, above all, there must be automatic controls to indicate when it should start and when it should stop, so that spending never can become a vote-getting instrument.

"Otherwise we start a system competing with private enterprise instead of assisting it, and threatening eventually to swallow up the whole economic order."

If business volume must fluctuate with our "free economic system" to the extent that unemployment becomes the dangerous phenomenon that it has been and is now, then to plan a permanent method for coping with it is entirely logical.

It is only when we are buying the products of industry in great volume that business is really active. It is the velocity of the dollar which makes for prosperous conditions—the more times in a given period the dollar is exchanged for goods or labor and a profit realized thereon, the better is the economic state of the nation. If business volume cannot be controlled to make it flow more consistently, and we must periodically drop into the valleys of recession, then why not plan scientifically to lessen their effect? A continuing census of the unemployed, a national board of strategy and state boards for planning, *completely divorced from politics*, would start us off. Long range programs of public works would be planned to provide the work necessary to keep up the incomes of workers as, if and when, industry must release them. The personnel of these boards should be able men who would devote themselves sincerely to this great problem, the solution of which would most surely be one of history's notable accomplishments. They would have to be men who could subordinate selfish interests completely.

In the prosperous years the budget must be balanced and, as in every well managed business, there should be reserves for the lean years. Such a plan unquestionably calls for cooperation of the first order. Is such cooperation possible?

According to Dr. James S. Thomas it is. He sees us divided into three great groups: One, the "go-aheaders so fast

that you can't keep up with them"; two, the "stand-stillers" who "find themselves defending a castle in which nobody but they live" and "they want no experimentation with their institutions"; and three, that "great group of people in any democracy which believes that you have some intelligent compromise to work out and if you can do it you will save your situation."

That third great group consists of most of us—business men and women, big and little; workers—union and non-union; professional people, farmers, white-collar workers, housewives. All of us really want the same thing in life—a fair and continuing income. And we want our incomes in the American way—not the Fascist.

Fascism's real menace "lies in its challenge to the Democracies to solve as well as *it* does the major problem of the twentieth century: The problem of unemployment," says Miss Thompson, and she suggests cooperation as the means by which to achieve this—cooperation through non-political boards, respected and supported by Industry, Labor and Government. Dr. Thomas calls it compromise but in its final analysis it again is cooperation, this time between radical, conservative and middle-of-the-roaders.

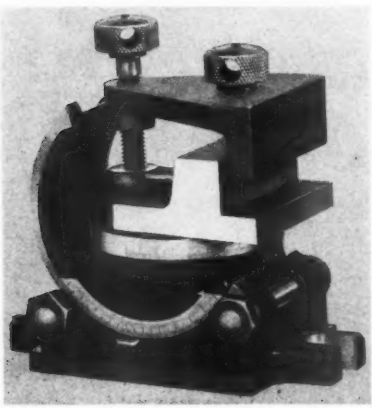
Looks like a tough assignment, and it is. But, in a country where so many achievements rank as "the greatest in the world," there must be men big enough for the job. If there aren't, then Heaven help us, for "eventually *millions* in America will ask what is wrong in a country where there is every resource, twelve billion dollars in gold, and twelve million people out of work."

But we prefer to believe with Dr. Thomas that: "With thinking men and with patriotic men and with men who love their country and with men who are willing to compromise and accept the active element in democracy, when you take all the opinions everyone can have and pass them through the alembic of compromise you distill something and preserve this magnificent civilization we have started here in the United States."

GEORGE J. HUEBNER
Editor

● THE VISE OF MANY USES FOR TOOL SHOPS AND PRODUCTION PLANTS ●

The BROWN Compound Angle Vise . . .



● Quickly adjustable by large accurate dial graduations to any angle or combination of angles.

Holds work securely and accurately in any position.

Independent clamping arrangement prevents distortion of base or change in position of work.

Saves set up time and eliminates expensive jigs and fixtures.

Individual holding fixtures readily adapted when used in production.

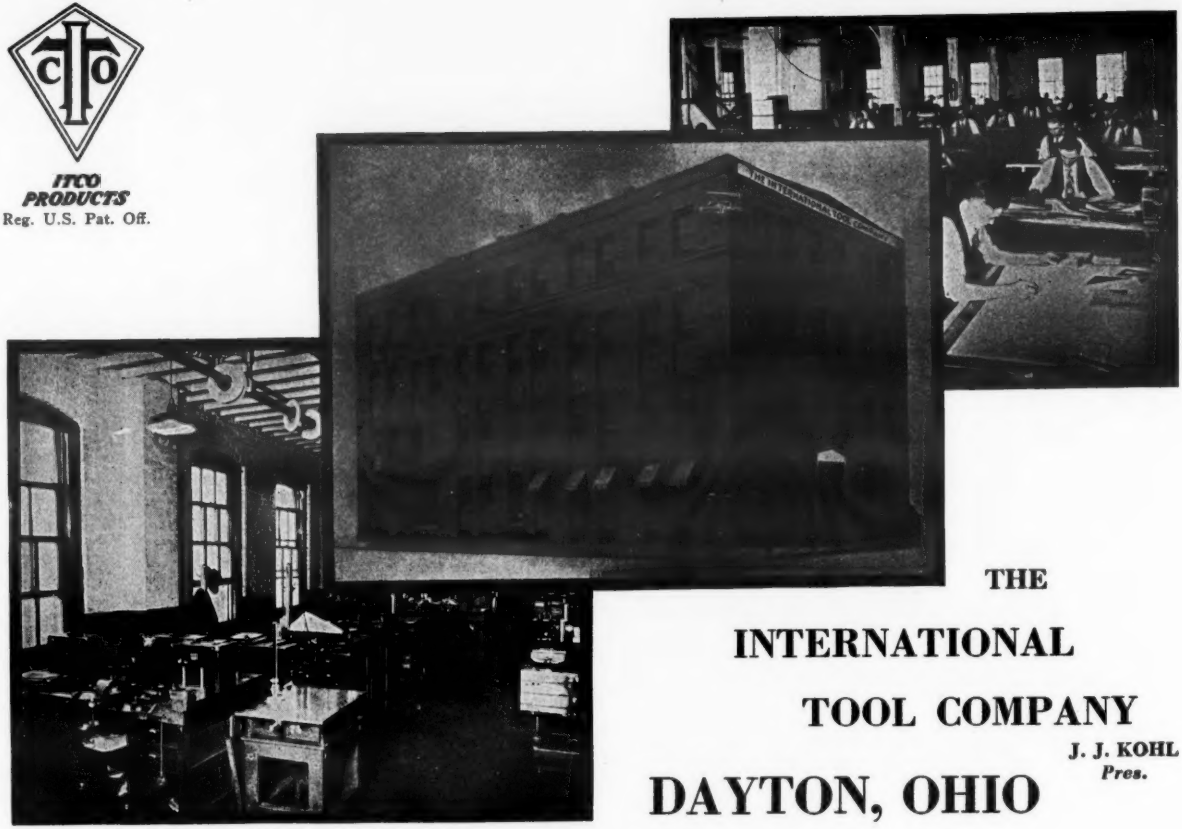
Write us for circular and price

THE BROWN TOOL CO.

10465 Carnegie Avenue Cleveland, Ohio

When you order or write about products described in TDM PROGRESS please mention the publication.

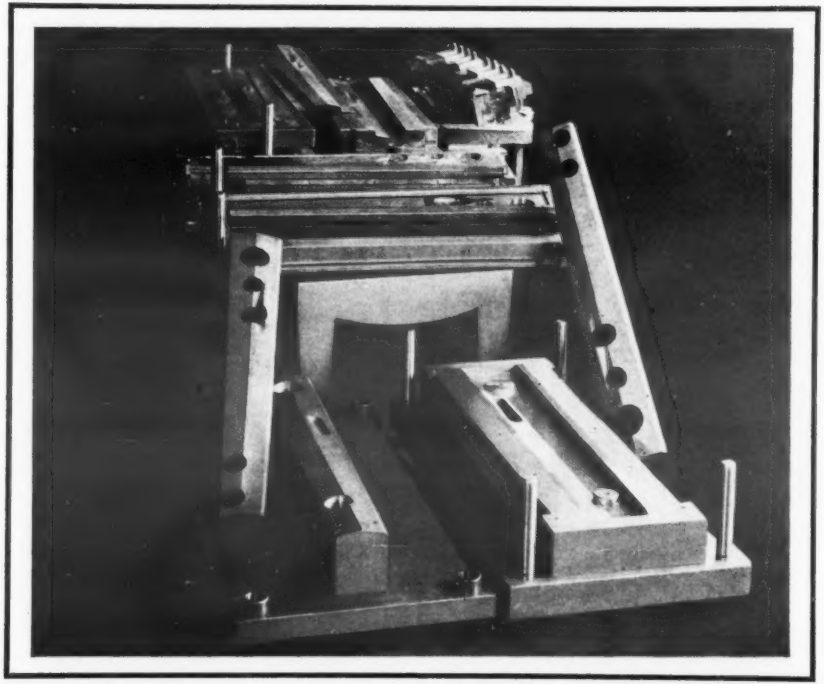
ITCO
PRODUCTS
Reg. U.S. Pat. Off.



THE
INTERNATIONAL
TOOL COMPANY
J. J. KOHL
Pres.
DAYTON, OHIO

When you order or write about products described in TDM PROGRESS please mention the publication.

Dies for a 4-Operation Job



ENGINEERED AND BUILT BY "INTERNATIONAL"

ITCO PRODUCTS
Reg. U.S. Pat. Off.

Our Specialty—
JIG,
FIXTURE,
DIE,
GAGE
MACHINE DESIGNING

—o—

COMPLETE
TOOL ROOM
and
MACHINE SHOP
EQUIPMENT

—o—

Subsidiaries

INTERSTATE
TOOL CO.
DETROIT
DIES and TOOLS

NATIONAL
PATTERN WORKS, Inc.
DAYTON, O.
WOOD and METAL
PATTERNS

When you order or write about products described in TDM PROGRESS please mention the publication.

What The Machine Has Done for Mankind

II—Conclusion

◆ ◆ ◆

By DR. JAMES S. THOMAS, President
Chrysler Institute of Engineering
Detroit, Michigan

◆ ◆ ◆

"The machine is changing our occupations, our recreations, our philosophies of life, our social outlooks, our political outlooks even, and is having some effect upon our religious faiths. This thing is happening to us, and it is the most powerful influence in our western life — this thing we call the machine, which is technology development," says Dr. James S. Thomas in this continuation of his enlightening article. He carries us back into the machineless periods of history, deftly sketching economic developments and cultural conditions through the ages from the days of slavery to the present. One by one he answers complaints about the machine and its effect upon workers. He gives us statistics but he presents them so incidentally that they become one with the interesting text. You will enjoy this second installment as much if not more than the first. — The Editor.

◆ ◆ ◆

They say the products of the machine aren't very beautiful, either. I found a beautiful pair of pliers the other day, but I had about despaired of finding an artistic monkey-wrench until a man at the hardware convention in Memphis the other day gave me one. The Greeks never made a more beautiful thing so far as mass and distribution of mass and line and curve go. It is a lot of nonsense. Did you ever see a picture of that first pair of silk stockings worn by the first woman in the world said to have worn silk stockings, Queen Elizabeth? Well, I have had my suspicions about those socks, but somebody sent a messenger all the way to China, brought the silk home, it was cut up in gussets and sewed up in seams and the Queen wore them—very expensive, only a queen could wear them. Now for 98 cents I can go into one of your first-class stores in Washington and if I am in a bargaining mood I can buy a pair of stockings, machine made out of a saw log off the hillside, that are far more beautiful than that first pair of silk stockings worn by a queen when only a queen could afford the expense of them, and with half an eye I can go out on your street and pick out more beautiful limbs to put them on. Instead of one queen wearing one pair of silk stockings now, millions of queens wear silk stockings everywhere.

No artistry in the product? It is just too bad. As a matter of fact, what the machine has done, and about all it has done in this field, is to democratize beau-

tiful things and enable masses to possess them for the first time in the history of this world.

Somebody says, "I could like your old machine but it is so inhuman." Is that so? "Yes, robots, men handcuffed to the machine." Of course they are forgetting the man with the hoe. "Mere automatons it makes of men, tyrannous technics."

Well, it is a nice thing to write about that village smithy, but I prefer sitting on a comfortable seat in a ventilated factory, manipulating a two-ton trip hammer with a little lever, better than swinging a twelve-pound sledge hammer fourteen hours a day as Longfellow's village smithy swung it. And bear you in mind, Longfellow only wrote about that fellow; he didn't try swinging that hammer or he would have changed his tune.

They say it is very inhuman. Let me tell you something. I think this is historically accurate; I am going to venture it. The machine has done more to free men of arduous toil, to free men of slavery, than all of the talk since Aristotle. That is a strong statement, but you think it over. Christianity, with the message of the Master ringing in its ears, for nearly 2000 years tolerated slavery, until the machine made that kind of labor uneconomic, and out it went. If some of these people who are criticizing the machine will follow me around the world I can show them some countries today where a form of slavery still exists, but only in places where they do not use the machine, and it is an interesting thing that as the line goes up representing the introduction of the use of machines on the farm, the line of tenant farming, a form of slavery we no longer like to think about, goes down.

What is it Oscar Wilde says? "Civilizations have always had to have slaves. Human slavery is degrading and debasing, therefore the future of the human race rests on the slavery of the machine." There is a poet with a sociological background and he is talking sense. Slavery persists today in many countries of the world where the machine is not used. The only thing the machine has done (and let me repeat) is that it has released millions from muscular toil for a certain amount of waking leisure, and it is our business now to teach these men to use wisely this leisure for creative cultural hobbies. If we do we will show the world such a renaissance as it has never had before.

Altruism has a very poor record in this matter of freeing slavery, but they say, "I like the old handcraft days. Oh, I love the handcraft days!" Great stuff if you don't read history. Nothing has been more over-glorified than handcraft. Two hundred years ago London was a handcraft town. I looked into that. The industrial workers there had "pride in their work" but "disease in their systems," because they died at a rate of fifty a thousand then, and today the industrial workers in London, now that the country has been mechanized and sanitized and worked at from the technological point of view, have a death rate of eleven a thousand, which is about normal. Besides, the masters created—the handworkers only copied and therefore were drudged, and doing it eighteen hours a day.

Don't forget there was only one Hepplewhite. What were all the men doing who were making furniture? Copying the master; they were not artists at all. I looked into the matter of the shoemaker of England as late as 1810, who spent eighteen hours a day at his bench, eating three meals off his lap because he didn't have time to go to the table and didn't have any to go to. He was doing nothing more than the man on the line is doing who is finishing off the automobile designed by the master. This man is working eight hours a day, five days a week; that fellow worked eighteen hours a day, six and seven days a week—the only way he had to sustain himself. Half of all the labor in the baronial days ate their meals off their laps and slept on the floor because they had neither tables nor beds. I say we are making some progress.

To say that all people who worked with their hands prior to the steam engine were artists is not only nonsense, it is elephantine nonsense.

Somebody said, "I could like your machine but it makes people unhealthy." Well, I am not so sure about that. As a matter of fact I am sure it doesn't. I went to England for these figures because theirs is the best census in the world, all statisticians know it; you can

(Continued on page 33)

Die Designing and Estimating

By CHARLES BOHMER

This fifth article continues the series on "Tool Designing and Estimating" as this subject is being taught to Tool and Die Shop apprentices under the auspices of the Chicago District of the Tool·Die·Machine Shop Institute in the Carl Schurz High School. The author, Charles Bohmer, tool superintendent of the Federal Tool Corporation, is one of the class instructors.

Block and Pad Forming Dies

THESE types of forming dies are of both single and multiple construction by which we mean that forming takes place on one or more blocks.

In the multiple form, the blank may be of the "U" or box shape and in the single form the most common shape of blank is the "L" type. Multiple or single, the dies are composed of a pad, form blocks, form punch and a pressure arrangement, the entire unit mounted on a standard die set with or without leader pins.

THE MULTIPLE BLOCK & PAD DIE

This type of die is used in the forming process having more than a single bend. For each bend we must have a punch and die edge, the die usually being two or more steel blocks mounted at a given distance determined by the piece part or specific dimensions with a movable pad inserted between.

A great deal of side pressure is exerted on the blocks and this must be considered in their general construction. To prevent them from moving, either of the following may be brought into use:

1. Tie the blocks together by means of cross pieces.
2. Sink the blocks into the die shoe, obtaining the necessary support from the edge of the sinking.
3. Construct the blocks wider than they are high, a proportion of at least one to one and one-half and use large, sturdy dowel pins.

This phase of construction is very important, particularly if the material is excessively thick or has a great deal of resistance. If flat gauges are used, they are usually mounted on the blocks, therefore, provisions must be made for screw and dowel holes.

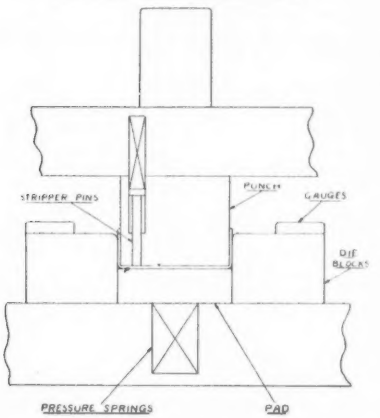
On the form edge of the blocks, there must be the proper radius to prevent digging, determined by the thickness and type of material. General practice limits it to not less than twice material thickness and of a high polish for best results.

The pad is the movable member of the die. It is mounted between the die blocks and is retained by means of a retaining shoulder or by shoulder screws. In the case of the retaining shoulder construction, a recess is machined into the form blocks and the corresponding shoulder machined on the pad.

The amount of travel the pad must have depends upon the height of the form, however, it is not necessary to have the pad travel the full height of the form—it has usually been found that half the distance is sufficient. If the blank is distorted a bit or has a tendency to curl and cause the completed blank to be out of square, it may be necessary to travel the full length.

To actuate the pad, springs may be inserted directly into the shoe or the stud and bumper arrangement may be used. The latter is, at times more desirable than inserted springs inasmuch as the pressure can then be controlled or adjusted.

MULTIPLE BLOCK AND PAD FORM



The stud and bumper construction is composed of a stud, spring or rubber bumper, pressure washer, pressure pins, thrust washer adjusting and lock nuts, all of which are fastened to the die shoe.

The stud is screwed into the shoe, the pins leading to the pad, the pressure washer contacting the pins, the spring or rubber bumper encircling the stud and exerting pressure against the pressure washer and the thrust washer adjusting and lock nuts holding the spring or rubber in place adjusted to the correct pressure.

The punch, which is mounted on the punch holder, is of tool or machine steel hardened according to the severeness of operation. With the necessary provisions of proper screws and dowels and, in some cases, clearance for gauge pins.

The width and shape of the punch is determined by the part to be formed and at all times it must be twice the material thickness smaller than the width or span of the die blocks.

Provisions for stripping must also be made, either by means of a knock-out, stripper hook, or stripper pin construction. This is very important to take into consideration during the construction of the die.

Another type of block and pad form die is that of the yoke and insert. All principles of construction hold true with the die blocks inserted into a soft yoke and the yoke assembly in turn mounted on the die shoe. This construction has a

Gear Specialties

SMALL GEARS

SPURS
SPIRALS
BEVELS
WORM-GEARING
RACKS
RATCHETS
SEGMENTS

SMALL GEARS

14 to 96 D. P.

14 to 96 D. P.

High Precision or commercial Production—a few pieces or a million.

SPIRAL GEARS like these can "go haywire in a hurry" if they are not '*right*' . . . Being *right* or *wrong* is the big difference between being IN or OUT of the 'know-how'. Buy *yours* from SPECIALISTS such as—

Made to order ONLY—*No stock—No catalog*

Gear Specialties
INCORPORATED
CHICAGO

2640 W. Medill Ave. Phone Humboldt 3482

When you order or write about products described in TDM PROGRESS please mention the publication.

SAVE ON HONING

Our new method achieves greater accuracy and a truly superior finish. The greater honing speed which is possible on our new machine effects savings over both grinding and other honing methods.

This machine has proven itself particularly effective on unusually long bores and will efficiently handle pieces 5 feet in length, diameters 3 inches to 12 inches.

We solicit your inquiries.

* * *

EMPCO FORGED CRANKSHAFTS

for Power Presses of all types are custom built for extra heavy duty and much longer service.

Get acquainted with them. They reduce upkeep costs.

* * *

A portion of our plant has been particularly adapted for

EXPERT MACHINE REBUILDING

We maintain a large stock of production machine repair parts.

Catalog and prices on request.

ENTERPRISE MACHINE PARTS CORPORATION

Jerome Avenue at McNichols Road
Detroit, Michigan

decided advantage in that the blocks may easily be replaced or shimmed when worn, but it is slightly more expensive and for that reason not generally used except on high production dies.

The inserts are held in place by means of screws leading through the sides of the yoke. Dowels are not necessary because of complete side confinement. The yoke must be of sufficient strength to withstand the side pressure.

IMPORTANT PRECAUTIONS

To assure uniform parts, the pressure pad must extend above the die blocks and thus confine the blank between punch and pad before actual forming takes place.

In the insertion of pressure springs, the pressure is exerted on the retaining shoulders of the pad and they must be strong enough to resist the shock and blow of this pressure.

In the stud and bumper construction, the pins which exert pressure directly on the pad must be of such length that when the pressure washer bottoms home on the die shoe, complete pressure is released from the pad. In this way, all possible danger of breakage of the retaining shoulders is eliminated. In other words, the pressure of the spring or rubber bumper is stopped by the die shoe.

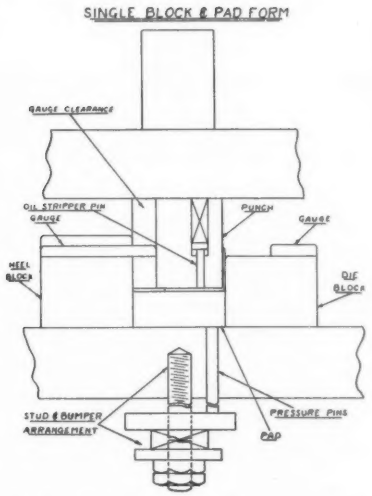
The shoulder method of retainment of pressure pad should only be used when it would not be practical to use the shoulder screws—for example, the small pressure pad. When shoulder screws are used, the die shoe must be thick enough to permit sufficient travel.

The punch must always be high enough to allow complete forming of the part without interference from the punch holder.

SINGLE BLOCK & PAD FORM DIE

This die is similar to the double type in construction and operation but forms only on one side, being used for single bend or "L" formed parts. Most principles involving pad, block and punch are followed, but since forming takes place only on one side, there is extreme tendency for side movement which must be overcome. This may be done by heeling or supporting the punch. Another problem involved is blank slippage due to one

When you order or write about products described in TDM PROGRESS please mention the publication.



side forming that may be overcome by pilot pins, extreme pad pressure or diggers.

As stated previously, the construction is similar, but in order to prevent punch side movement, the block opposite the form must be higher, usually about ¼" plus mat thickness and no clearance between it and the punch. The distance between the two blocks is determined by the amount of blank slippage and dimensions from the form to end on the pad side of the blank.

A convenient way to overcome or prevent difficulty caused by blank slippage is to make the pad wide enough (distance between the two blocks) to mount a flat gauge in such position relative to the amount of slippage. The gauge should be high enough to permit rapid loading and clearance made for it in the punch. During operation, the same pressure must be maintained as during development to assure desired results and accuracy.

If this type of die is constructed properly, close tolerances will be consistently maintained without difficulty.

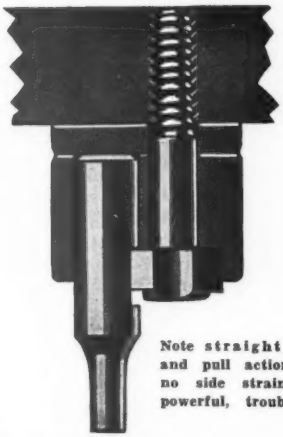
GENERAL NOTES

Should there be a tendency for the form to be out of square, several means of prevention can be made, such as undercutting the forming surface of the

(Continued on page 35)

NO SPRINGS! NO GADGETS!

on the Hovis Punch Retainer



Note straight thrust and pull action with no side strain—sure, powerful, trouble-free.

The Hovis Screwlock method for retaining punches is so simple that its advantages are obvious:

Positive Interchangeability and Quickest Replacement of Punches . . . Partial turn of Screwlock with standard socket wrench *really* releases punch.

The New Hovis Square Hardened Retainer is ideal for *close grouping.* With punch close to one corner, it has all advantages of both square and end type retainers . . . For *compound dies,* it permits punch mounting close to die sections.

* * *

A Hovis Record

Progressive die with Screwlock Retainers and Punches delivered 12,000,000 stampings from 13 gauge steel.

* * *

It will pay you to investigate and send for catalog . . . We make all kinds of punches.

HOVIS SCREWLOCK CO.

3129 Larned St., East Detroit, Mich.

Representatives

Pennsylvania - New Jersey - Maryland - Edward R. Glenn
1438 N. 13th St., Philadelphia, Pa. Phone - STE 4658

Wisconsin - Lee Eckelman
4417 W. North Ave., Milwaukee, Wis.
Phone - Kilbourn 7513

When you order or write about products described in TDM PROGRESS please mention the publication.

Koestlin Makes Heavy Duty Grindrite Portable and Introduces Portable Work Bench

THE Koestlin Tool and Die Corporation announces a portable model of the Grindrite Heavy Duty Die Grinder and, coincidental with it, a companion Portable Try-out or Work Bench. Both are mounted on adjustable casters or rollers, thus making them readily movable to all parts of the shop.

This portability greatly enhances the value of the Grindrite Grinder because it is now possible to bring the machine to the work. When used in grinding die sections which are in the process of being fitted, the die maker no longer needs to lose time traveling back and forth to a distant part of the shop. On a production job, heavy parts and pieces can be ground without time consuming conveyance to the grinder. They may be placed where they will be ready for the operation which follows grinding, thus eliminating intermediate handling.

Greater efficiency results from the use of the Koestlin Portable Try-out Bench in conjunction with the grinder. Die parts can be spread out on it and it is equipped with a standard vise when handwork becomes necessary. There is a shelf and a drawer for files, tools and other items that it is desirable to have close at hand. The portable bench is sturdily built and strong enough to support any materials or parts which its surface dimensions will accommodate. The design of the Grindrite frame has not been changed and inasmuch as the Work Bench is practically identical with it the same rigidity when in use is assured. The caster unit is brought into use only when the grinder or the bench are to be moved and this is accomplished easily by the use of a single lever, making them portable with or without load.

Additional information and prices on the Grindrite Grinder, with or without the new caster unit, as well as the Koestlin Portable Work Bench, may be had by writing Koestlin Tool and Die Corporation, 3601 Humboldt Avenue, Detroit, Michigan.

ACME

STANDARDIZED

Drill Jig Bushings

•

Leader Pins and Bushings

•

Dowel Pins

Send for Complete Catalog or Specific Data Sheets

•

We also Specialize in Complete Machine Part Manufacture Requiring Extremely Close Limits, Lapped Fits, etc., for Pressures up to 15,000 lbs. per Square Inch.

ACME INDUSTRIAL CO.

206 No. Laflin St., Chicago, Ill.

forgings

We carry in stock a complete line of water and oil hardening *Tool Steel* for forging into *Rings, Discs and Special Shapes.*

—•—

We specialize in *Composite Steel Forgings*—tool steel welded to soft steel in various shapes and sizes.

—•—

We have in stock both hard and soft *Copper* which we forge to order into *Rings, Discs and Special Shapes.*

—•—

Complete stock of Machine and Alloy Steel.

—•—

Composite Die Forgings in Cleveland since 1917.

LAKE ERIE FORGE AND MACHINE CO.

1532 University Road

CLEVELAND, OHIO

Telephone: Cherry 8479

When you order or write about products described in TDM PROGRESS please mention the publication.

WE BUILD THEM . . . W
YOU USE

● When we deliver
which have been built
they are ready for imm

Regardless of their size
press facilities for "try-

The die adjustments
most always required t
functioning and the
perfect parts or produ
by us in our shop.

Your presses need not

This can be such an i
tor when determining
vantageous source of

●

More About Ou

We have developed
and built our organiza
goal continually in mi
precision workmanshi

Customers for whom
signed, developed or b
dies, machines or ot
products are our best

*May we estimate you
quirements?*

THE BUNELL MACHINE

1600 East 24th Street

Telephone PHospe

Fine Precision Wor

DIES TOOLS JIGS FIXTURES GAGES MODELS

WE TRY THEM OUT . . .
SE THEM!

deliver a set of dies
en built in our shops,
for immediate use.

heir size, we have the
for "try-out."

ments which are al-
quired to insure exact
d the production of
r products are made
op.

eed not be "tied-up."

ch an important fac-
min ng your most ad-
urce of supply.

out Our Shop

eloped our facilities
rganization with one
y in mind—*the finest*
manship.

whom we have de-
ped or built fine tools,
s or other precision
ur best "salesmen."

ate your tooling re-

NE & TOOL COMPANY

PRospect 2681 Cleveland, Ohio

on Workmanship

MODELS MACHINES SPECIALTIES DESIGNING ENGINEERING

Continental Announces Two New Machines

Larger Capacity Doall Contour Machine and Low Priced Band Filer.

A NEW Doall Contour Machine with a 50% greater sawing capacity has been developed by Continental Machines, Inc. Known as Model ML, the machine's work scope has been broadened to cope particularly with the continual improvements which are being made in alloy steels. Representative of its more rugged construction is the larger guide support post which measures 1½" x 1", the 16" wheel diameters to increase power, the heavy duty screw feed attachment and the "steel girder" type of welded construction. This ML model accurately saws materials up to 10" in thickness. It has a 16" throat capacity and a work table 24" x 24" which tilts in 4 directions.

The operating principle of all Doall Contour Machines is the cutting of a "pencil line" kerf with narrow precision alloy saw blades which operate successfully in metals even as hard as stainless steel. The shaping of parts is completed by continuous down-stroke filing for which 13 different types of files have been designed to cover a wide range of materials. Another function of the machine is band polishing.

The illustration shows a contour sawing operation with the power feed in use. Also of interest are the new heavy guide support post, the removable chip receptacle, and as in other models, the safety switch, power feed adjustment wheel and foot release, automatic butt welder for joining saws, the tachometer for determining exact speeds and the job selector dial.

As with all other models, the ML is admirably adapted for die making but it has also a wide range for production work in non-ferrous metals, plastics, hard rubber, fibre, aircraft, shipbuilding alloys and sheet metal. The variable speeds required for these different materials are obtained through a Speedmaster variable pulley unit which pro-

(Continued on page 37)

CONTINENTAL'S new band filer is a low priced model built particularly for precision and accuracy in close finishing work. It is however rugged enough for the heavy filing that is necessary in die building or wherever products or parts require rapid precision workmanship of this kind.

The Continental Band Filer has a 12" work table, which tilts in two directions, so that work may be filed at an angle. The gear reduction transmission and all other working parts are contained in a single housing. Sealed ball bearings are used throughout.

The file band is a Swedish flexible

(Continued on page 36)

Doall Model ML Contour Machine with power feed in use.

A Complete Design Service for

TOOLS . . . DIES
SPECIAL MACHINERY

Qualified and Experienced

PRESSED METALS ENGINEERING

1928 E. Jefferson Ave., DETROIT, MICH.

Established 1930 Phone Fitzroy 1187-1190

BOYAR-SCHULTZ
PROFILE GRINDER

WITH SINE BAR ADJUSTMENT

A Real Time Saver

. . . . when grinding and fitting die clearances, gauges and templates. Saves long hours of stoning odd shaped dies.

Write for circular.

BOYAR-SCHULTZ CORPORATION

2112 Walnut Street Chicago, Ill.

Send for Valuable Booklet

Composite Die Sections—Rings—Discs Blocks — Shafts — Hubs — Bars and Special Shapes.

▼

Billets and Bars of High Speed Carbon and Alloy Tool Steel.

▼

Billets and Bars of SAE Specifications Nitralloy and Stainless Grades.

▼

Copper Forgings

AJAX STEEL AND FORGE Co.

205 ADAIR STREET DETROIT, MICHIGAN

When you order or write about products described in TDM PROGRESS please mention the publication.

The Catalog Review

Brief descriptions of current industrial literature including technical booklets and bulletins, catalogs and circulars. All may be had upon request, without charge. . . . Please use identification numbers.

COMBINATION PUNCHES, SLITTING-SHEARS, BAR-CUTTERS.—"Angles, Tees, Rounds, Squares, Flat Steel—Punching, Bar Shearing, Angle Shearing, Plate Slitting, Coping, Notching—it's all in the day's work with 'Buffalo' Universal Iron Workers." A looseleaf binder of unusually well illustrated bulletins, describing these rugged production machines built by a firm established more than 50 years ago and continuously engaged in the manufacture of metal working machinery. Outstanding features are full-floating punchhead; simple, full release of punch stripper; die-blocks which permit flange and web punching of beams and channels without changes; sectional knives; Armor-plate electrically welded steel frames, guaranteed unbreakable forever; motor or pulley drives. Machine operating features, capacities and specifications are given in detail. Write Buffalo Forge Company, Machine Tool Division, Buffalo, New York, for TD-401.

ARBOR SPACERS.—A new combination catalog and price list of De-Sta-Co Arbor Spacers for milling machine cutters, for slitters, gears, bearings, etc. The ultimate gains in saving of time of high priced mechanics, in saving of idle machine time, and in getting out important jobs without delay by using standard arbor spacers are discussed. Their cost is negligible. Spacers with keyways, identification marks and spacers of special thickness are described. Price list includes several hundred spacers varying in thickness, hole and overall diameters. A new cellophane, moisture proof package of spacers of assorted thicknesses is also illustrated and described. Write Detroit Stamping Company, 3443 West Fort Street, Detroit, Michigan, for TD-410.

COMPOSITE DIE SECTIONS, TOOL STEELS, S.A.E. SPECIFICATION STEELS AND COPPER FORGINGS.—A wire bound, 65-page specification handbook of the Ajax Steel and Forge Company describes advantages and savings effected by using composite die sections in the building of blanking dies. Rings, discs, blocks, shafts, hubs and bars are listed and priced and concise instructions are given for ordering. Other products are billets and bars of high speed carbon and alloy tool steel including S.A.E. specification, nitralloy and stainless grades. Charts and tables which will be found extremely helpful by engineers, estimators and shop men show approximate weights per lineal inch of composite die sections and round, square and flat steel; U. S. standard gages for sheets and plates; temperature and hardness conversion tables as well as tool steel, carbon steel and special steel specifications of Chrysler and General Motors Corporations and the Ford Motor Company. Write Ajax Steel and Forge Company, 205 Adair Street, Detroit, Michigan, for TD-403.

SPACING FIXTURE. — A circular graphically illustrating and describing several actual job setups for which the new Hartford Superspacer is proving a time-saver. A cutaway view of the superspacer, outline of its exclusive features and general specifications are given. An optional drilling attachment is also illustrated and described. The saving of time and assurance of greater accuracy from the use of the superspacer are readily apparent to tool maker and production official alike. Write The Hartford Special Machinery Co., Hartford, Connecticut, for TD-402.

HYDRO-TEL COMBINED VERTICAL MILLING AND DIE SINKING MACHINES.—More than 53 years of experience are built into Cincinnati milling machines. From the plainest millers of the standard type through the entire line to the company's Hydro-Tel vertical milling and die sinking machines they have world-wide recognition for their design and construction. The company has published a new bulletin, the vertical Hydro-Tel line, and it is interesting from the standpoint of the new possibilities for milling which it depicts. Both conventional milling and die sinking are illustrated and set forth as being profitable on the same machine fitted with standard attachments. The machine is described as a new development in the field of general purpose milling machines; combining: maximum rigidity of structure, extremely efficient spindle drive, almost effortless physical effort of manipulation, and independent and non-related feed rates to cutter and work slides. In the vertical Hydro-Tel milling machines the effort has been to combine the best features of the double housing rail type vertical spindle milling machine and the knee and column type vertical miller and to this end are incorporated an improved spindle drive and an independent, non-related feed traverse rates to the cutter and work slides. The vertical Hydro-Tel is admirably suited to die work. The bulletin carries numerous photographs of the machine fitted with standard fixtures automatically sinking die cavities with the use of a completely automatic tracer control mechanism. Complete machine specifications are included. Write The Cincinnati Milling Machine Co., Cincinnati, Ohio, for TD-407.

SMALL SCREW CUTTING LATHES.—Two new Atlas backgeared screw cutting lathes, with swinging diameters up to 6 inches, are illustrated and described in complete detail. Many phases of the modern, compact design are discussed and close-up views of the lathe construction are included. The entire bed of the lathe, comprising cross ribs, ways, and base, is a single heavy casting of close-grained semi-steel iron. The box-type ribs and wide thick ways resist all turning and twisting forces. This modern scientific bed design provides a strong, rigid foundation for the entire lathe. Large bearing surfaces and provision for their complete adjustment and lubrication minimize wear and maintain accuracy. Numerous chucks and collets, milling attachments and cutters, centers, dogs, rests, holders and similar products are also illustrated and described. Write Atlas Press Company, Kalamazoo, Michigan, for TD-405.

PANTOGRAPH MACHINES.—This new instruction book and parts catalog is a 1938 edition and covers all Gorton Pantographic Machines, both new and obsolete models. Users of these machines will welcome the helpful data contained in the 40 pages and several area charts. Detailed instructions are given for the making of copy, masters and models, including three-dimensional work. Special attention is given to the grinding and operation of cutters, particularly the single flute type. Die and mold makers will find the book of great value. Write George Gorton Machine Company, Racine, Wisconsin, for TD-413.

COPPER HEAD EXPANSION LAPS ELIMINATE OLD METHODS.—How Boyar-Schultz copper head laps, new in design, in principle and in operation can result in greater accuracy, in time saved and in reduced costs is the subject of this new bulletin. A unique cover design reproducing a large number of purchase orders from leading Tool and Die shops and manufacturers using laps in their tool rooms. Construction of the new expansion laps is illustrated and discussed in complete detail. Die makers copper head laps are available in 17 sizes ranging from ⅛" to 1", expansion type copper head laps available in 17 sizes ranging from 1" to 2" and a special tool maker's bench lap set consisting of seven laps and three copper sleeves for each size, 6-ounce can of prepared lapping compound and a black enameled die cast holder, will be of interest to tool and die builders. Write Boyar-Schultz Corporation, 2114 Walnut Street, Chicago, Illinois, for TD-408.

(The Catalog Review is continued on next page)

PRECISION MEASURING TOOLS.—Complete catalog of tools manufactured by The Precision Tool Division of The Lufkin Rule Company. Each of the numerous measuring instruments illustrated in this 130-page booklet is described as to quality and directions for use. Of unusual interest and value to Tool and Die makers are several types of depth gages, a master planer and shaper gage, die makers squares with hardened and ground head and blade, a telescoping gage particularly for use on small blanking dies, a tool makers universal surface gage with hardened base, tool makers parallel clamps and special spring calipers. Tables of decimal equivalents, useful arithmetical rules, weights of sheets, rods, bars, etc., the metric system, U. S. wire gage standards, diameters for standard screw threads, U. S. standard gage for sheet and plate iron and steel, and a table for solving right angled triangles are included. An unusually valuable book for all engaged in designing and building tools and dies, as well as engineers and superintendents in production plants. Write The Lufkin Rule Co., Saginaw, Michigan, for TD-404.

NUMBERALL NUMBERING MACHINES.—A series of circulars illustrating and describing all types of numbering devices from the single wheel rotary stamp to the automatic numbering head. Numberall products have a reputation for being strongly constructed of steels particularly adapted to their purpose. All parts are tempered in thermostatically controlled electric furnaces and carefully inspected. Rotary steel stamps are available individually and in sets. The stamps are mechanically engraved for accuracy and long life. Visibility of both the marking position and the characters saves time in use. Automatic numbering heads are available for use on foot, screw or hand power punch presses on metal, wood, fibre and the plastics. The name plate detail press for use with multiple numbering machines is offered as a faster method for stamping details into etched name plates. Prices and sizes are included. Write Numberall Stamp & Tool Co., Huguenot Park, Staten Island, New York, for TD-414.

RAPID PRODUCTION LATHES.—"Doubling Production per Hour" is the title of this new book dealing exclusively with LeBlond rapid production lathes. With an outside cover showing the little old mill and the energetic dwarfs busily turning out all sorts of 20th century products—bath tubs, automobiles, electric refrigerators, clocks, etc.—we next see illustrated hundreds of the parts of which such finished products are built up. These of course are machined on LeBlond rapid production lathes which "completely cover the need of this rush production field." Illustrates in detail and describes their number 1 and 2 of the four-way 11" lathes with high speed motor head; number 3 and 4 of the same type but with six speed geared head and the heavy duty 16" and 19" double range lathes with six speed geared head. Throughout the catalog, stress is put upon high speed production. Included also with unusual descriptive details are descriptions of LeBlond lathe accessories—tool rests and blocks to increase production; automatic controls to increase production efficiency and special attachments to widen the range of work.

LeBlond's fiftieth anniversary book "What Makes Main Street," which attracted so much attention because of its no less than spectacular approach to the subject of lathes, has a worthy little brother in "Doubling Production per Hour." The anniversary book was reviewed in Tool·Die·Machine PROGRESS issue of October, 1937. Those who have "What Makes Main Street" will want this latest catalog, while others may request both books. Write The R. K. LeBlond Machine Tool Co., Cincinnati, Ohio, for "What Makes Main Street," TD-406, and for "Doubling Production per Hour," TD-415.

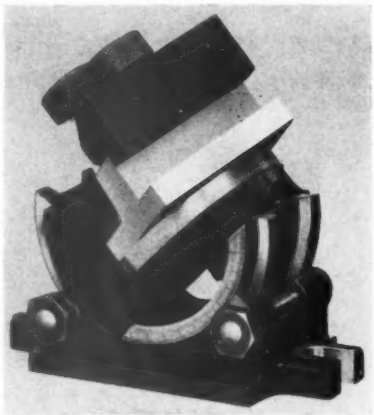
LAYOUT FLUID FOR DIES, TEMPLATES, ETC.—A small bulletin explaining how losses caused by eye strain and metal glare may be prevented by use of Dykem Steel Blue, a layout fluid for use on dies, templates, and similar items. Locating high spots on gears, bearings, and other surfaces is another valuable use discussed. Write The Dykem Company, 2201 North 11th Street, St. Louis, Missouri, for TD-409.

New Compound Angle Vise Announced

A NEW Compound Angle Vise having almost unlimited use in tool and die shops and production plants is being offered by The Brown Tool Company of Cleveland. The Brown Vise is so designed that it holds work pieces at any angle or combination of angles both securely and accurately. The fact that there is no overhang assures unusual rigidity. An independent clamping arrangement prevents distortion of the base of the vise or changing the position of the work. Clamping a piece to be held is both simple and positive.

Those parts of the vise which are subjected to strain are made of special steel alloys, hardened to reduce wear. Both graduations are of sufficiently large scale to be easily read and accurately set. The easy adaptability of the Brown Vise to complicated setups for grinding and other light machining operations frequently eliminates the necessity for special fixtures. On the other hand, for production purposes, such special holding fixtures can be readily used in place of the standard jaw.

Specifications of the vise include Maximum Jaw Opening 1½", Width of Jaw 3¼", Base 3½"x8", Weight 14 pounds.



Brown Graduated Compound Angle Vise, Model 12-BT.

Additional descriptive details may be had by writing The Brown Tool Company, 10465 Carnegie Avenue, Cleveland, Ohio.

Hamilton Mill Cut Rotary Files

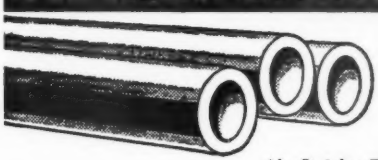
Eighteen standard shapes and sizes made up in five different cuts. Adaptable for all classes of work and for all kinds of materials. Try them on your next job.

Circular and price list on request.

THE HAMILTON TOOL COMPANY

220-248 North "B" Street Hamilton, Ohio

OIL HARDENING TOOL STEEL TUBING



Substantially reduces labor costs by eliminating the expensive procedure of drilling from the solid.

BISCO TOOL STEEL TUBING is a fine grade tool steel in tubular form available in sizes up to 14" diameter and 2" wall thickness; other sizes to your specification.

THE BISSETT STEEL COMPANY

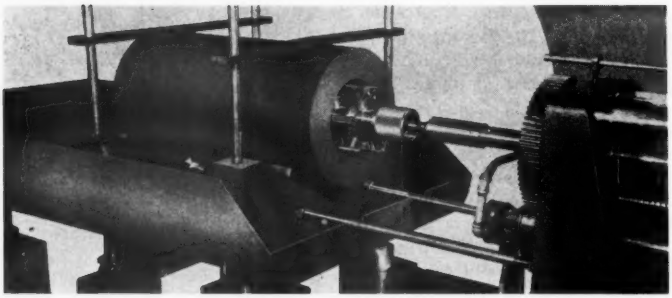
947 E. 67th St. Cleveland, Ohio

1036 W. Lake St. Chicago, Ill. 367 Main St. Buffalo, N. Y

Also Stainless Tubes, Mechanical Tubes, Aircraft Tubes, Pressure Tubes

When you order or write about products described in TDM PROGRESS please mention the publication.

Enterprise Develops New Horizontal Honing Machine



Honing an 8¼" hole in a forged alloy steel cylinder 37" long on the new Enterprise Horizontal Honing Machine.

NEVER was it truer that necessity became the mother of invention than when Enterprise Machine Parts Corporation of Detroit was called upon to hone perfectly an 8¼" hole 37" long in a forged alloy steel cylinder—S.A.E. 3140—Brinell hardness .534. Inaccuracies encountered with other methods of honing made it necessary that Enterprise develop a new machine, the original model of which is illustrated herewith.

The new Enterprise Honing Machine employs the horizontal principle and the hone proceeds continuously the entire length of the work piece in a single operation. Previously it was necessary to hone one-half of the cylinder then reverse it and hone from the opposite end. This resulted in a variance in the bore dimension whereas by the Enterprise method there was absolute uniformity. The hone itself floats on spindles with ball joints thus insuring also perfect concentricity.

Another important factor to be considered when perfect honing is required is control of the heat generated. With the Enterprise Honing Machine it is possible to direct the coolant stream most effectively and if necessary to practically immerse the work piece thus eliminating one of the dangers encountered particularly in vertical honing. This more effective heat control also makes possible a higher honing speed and a resultant saving of time.

The new machine is particularly efficient in honing holes 3" to 12" in diameter and will handle lengths up to and even greater than 5 feet. In the illustration the forged cylinder is 37" long and the hone removed stock for the 8¼" bore at the rate of .004 to .005 of an inch per hour.

At the present time this highly accurate honing service on the Empco Horizontal Honing Machine is available to manufacturers within a radius of 200 miles of Detroit. Later, when patent claims have been allowed, machines will undoubtedly be made available for purchase. All manufacturers of such products as pumps, hydraulic units and extruding presses which require cylinders or liners to have great accuracy and a fine finish, are interested in this new honing method. All other manufacturers who wish to make a comparison with their present honing or grinding methods are invited to write Enterprise Machine Parts Corporation, Jerome Avenue at McNichols Road, Detroit, Ave. at McNichols Road, Detroit, Mich.

(Continued from page 17)

find out how many of anything there were in England for 150 years by going to the English census. And they are the most industrialized country in the world, for there are 45,000,000 people in the British Isles and only 3,000,000 farmers. If the machine made anybody sick it would do it in England. They import 57 per cent of their raw materials, export 47 per cent of their finished products, and import 71 per cent of all the food they eat; therefore they are industrial. They got hold of this thing we call the industrial revolution first, which only means a new technique for doing more work in less time and giving masses leisure. I found that the healthiest classes listed were the glue workers and the fertilizer factory boys. When I quoted that, the actuary of one of the big metropolitan life insurance companies said, "Where did you get these figures?" I wrote and told him, and he said, "We charge these boys an extra premium."

The second healthiest lot were the electrical workers. The third healthiest were the steel workers. The fourth were the preachers—nothing to make them sick except the sins of their parishioners. The fifth were the gardeners, then the farmers, teachers, doctors, lawyers. And what at the bottom? The artists, authors who were writing all this stuff about the machines killing men. Those are the facts.

The Metropolitan Life Insurance Company of New York, has just recently given out the lowest death rate in all history. Poet policy holders? Oh, no! College professor policy holders? No. Doctor policy holders? Oh, no, no, no! None of these. The lowest death rate in history is among the industrial policy holders of America.

Somebody said, "I don't like it because it is so full of accidents." Well, we kill more people in the homes than we do anywhere else, even on the roads, and certainly we kill too many. We killed people in the horse and buggy days, too. In spite of all the people the automobiles kill, if you could figure it out on the basis of miles traveled per passenger, the automobile is safer than the horse and buggy. In 1912, 4,083

(Continued on page 42)

GROBET
SWISS FILES

★ GROBET SWISS FILES have won a reputation for supremacy wherever exact and precise work must be done with files.

Ask for our catalog YN, the most complete of its kind, showing more than 4,000 different shapes, sizes and cuts of precision files, also files for filing machines, rotary files, etc.

GROBET FILE CORP. OF AMERICA

3 Park Place New York City

HANDEE
TOOL OF 1001 USES

The wonder tool that is effecting such revolutionary savings in making and repairing tools, jigs, dies, etc.

Used also to repair hard-to-get-at places on machinery without removing the part. No shop can afford to be without the Handee.

Grinds
Drills
Polishes
Engraves
Sharpens
Carves
Cleans
Sands
Cuts
Saws

SAVES HOURS OF TEDIOUS WORK

Uses 200 different accessories instantly interchangeable in easy-working chuck. Take anywhere, plug in AC or DC socket, 110 volts.

STANDARD MODEL

Weighs 1 pound. 13,000 r.p.m. $10.75 postpaid with 3 Accessories.

DE LUXE MODEL

Finest, smoothest, most powerful tool for its type and weight, 12 ounces. 25,000 r.p.m. $18.50 postpaid with 6 Accessories.

Order Either Model on 10-Days Money-back Trial
Catalog Free.

CHICAGO WHEEL & MFG. CO.
1101 W. Monroe St., Dept. BZ, Chicago, U.S.A.

TDM-6

( )Send Catalog. ( )De Luxe Model. ( )Standard. ( )C.O.D.

Name .....

Address .....

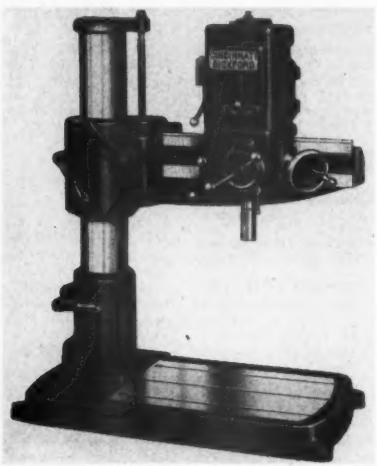
When you order or write about products described in TDM PROGRESS please mention the publication.

Small High Speed Radial Drill Added to Cincinnati Bickford Line

A NEW high-speed, all-geared, small radial drill developed particularly for use in shops which must do considerable small drilling and tapping in reasonably large parts or products is the newest member of the Cincinnati Bickford line. There are many shops in which this type of work is now being handled on less efficient belt-driven radials of the sensitive type.

This new 2½" High-Speed, Super-Service Radial Drill has a 7½" diameter column. Three changes of spindle speed are controlled by the upper lever at the left of the head. With a 1200 r.p.m. driving motor (A.C. or D.C.) the speeds can be any one of several optional ranges. Wider adaptability and a resultant greater range of usefulness are obtainable by equipping with a 2-speed A.C. motor which provides 6 spindle speeds, and is controlled by a convenient Fast-Slow-Stop switch.

Three rates of power feed, .003", .006" and .009" per revolution of spindle, are instantly selected by setting the indicator lever at the center of the head. This all-geared feed change unit is anti-friction bearing mounted, automatically oiled. The feed case is an aluminum alloy casting to keep head weight at a minimum, thus promoting ease of handling and decreasing deflection and wear.



The spindle control lever for forward-stop and reverse of spindle rotation is located at the lower left side of the head. It operates built-in push buttons controlling the small 1 h.p. totally enclosed reversing motor which is mounted at the rear of the head. The head is mounted on ball bearing rollers and hardened steel armway, and is moved quickly and easily at the rate of 3" per turn of handwheel. It is clamped to the arm by the center lever on the left of the head.

The simplicity and economy of operation of this radial drill are evident in the ease of operation, the levers which clamp the arm and column being always within easy reach of the operator.

The spindle is multiple splined, made of chrome-nickel steel, mounted on precision anti-friction bearings and packed in grease. The spindle does not feed away from its supporting bearings regardless of how far it may be extended. It is always rigidly supported by bearings which are close to the cutting tool. The spindle and sleeve are carefully counterweighted for rapid and easy operation.

This new 2½" radial drill is particularly well suited for use in tool, die and machine shops and manufacturing plants producing electrical devices, aircraft and automotive parts, domestic appliances, business machines and agricultural equipment.

Write The Cincinnati Bickford Tool Company, Oakley, Cincinnati, Ohio, for descriptive circular CL-499.

Ajax Adds New Eastern Representative

THE Ajax Steel and Forge Company of Detroit, producers of composite die sections, alloy steels and forgings, has appointed the Machine and Tool Designing Company, 900-905 Victory Building, 1011 Chestnut Street, Philadelphia, Pennsylvania, as representative in Eastern New York and Pennsylvania, New Jersey, Delaware, Maryland and Washington, D. C. As designers and engineers of special tools, dies, jigs, fixtures, special machines and other production equipment, the Machine and Tool Designing Co. is qualified to assist both builders and users in the construction and fulfillment of forging requirements.

(Continued from page 21)

punch, striking harder in the corners, or machining angle on form corner of die block.

When using the types of construction described, on a three side form slippage must be considered on the open side.

The block and pad die may be used on reverse forms, that is, the up and down forms. In this case, the spring pressure must be strong enough to form one side and then finish the other at the bottom of the stroke.

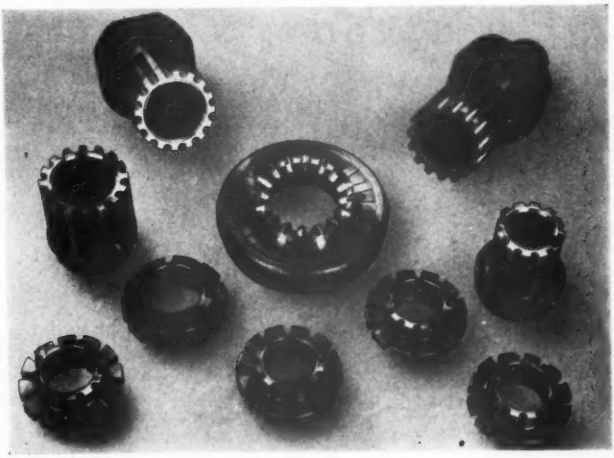
In all cases, provide proper stripping and make provisions to eliminate sticking of blanks because of oil, magnetic attractions or other causes.

Make all gauges high enough to permit fast operation and make them as fool-proof as possible.

When using the inserted spring, have sufficient travel and a proper hole size to assure minimum breakage.

When calculating sharp cornered forms very desirable results are obtained by allowing half material thickness for the bend. In all cases, whether sharp or with radius, make the blank a few thousandths of an inch shorter and then, if necessary, should the form be less than desired, round off the corner of the punch slightly to increase the height. In most instances, an absolutely sharp corner is not needed and therefore this practice may be carried out with satisfaction; however, if the corner is of importance, it is best to develop and disregard pre-calculation.

★
★
★



A **PERFECT CONTOUR GRINDING JOB**

We have specially developed facilities for difficult precision grinding in the building of Special Tools . . . Stamping and Coining Dies . . . Contour Rolls.

LINCOLN TOOL AND DIE COMPANY

Designers and Builders 950 West Fort St., Detroit, Mich.

When you order or write about products described in TDM PROGRESS please mention the publication.

More Hardness Conversion Charts Ready

A NEW supply of Porter Hardness Conversion Charts are ready for distribution. These charts, developed by The George H. Porter Steel Treating Company, 1225 Marquette Street, Cleveland, Ohio, are pocket size, printed on celluloid and available upon request to the company. More than 2000 have already been asked for and distributed.

HAVE YOUR DIES WELDED
BY THE ATOMIC-HYDROGEN PROCESS

- Welding of Jigs and Fixtures
- Repairing and Refacing of Dies and Moulds
- Welding Broken Machine Parts
- Stellite or Alloy Facing of Wearing Parts
- Mishaps and Errors Corrected

ALL DIE WELDING DONE WITH STEEL OF SAME ANALYSIS AS YOUR DIE

THE OVERLY-HAUTZ CO.
1617 West 116th St. LAkewood 3640
Cleveland, Ohio

Guaranteed
TO MEET EVERY SPECIFICATION

PRECISION MACHINES . . of the most intricate types, economically built.

SPECIAL TOOLS, JIGS and FIXTURES . . . designed and built.

CARBOLOY TOOLS . . we design and manufacture all types.

LYONS MACHINE CO.
5601 Tillman Ave. Cleveland, Ohio
WOodbine 2440

Continental Band File

(Continued from page 26)

spring steel band on which short segments of special files are riveted. When the band flexes over the upper or lower wheel pulley, the file segments open but close and interlock securely as soon as they leave the upper wheel, and form a continuous flow of rigid filing surface at the point of work.

The bands are furnished in various standard cuts and shapes, ⅜" and ¼" in width. There is also a Vixen, cut with very large milled teeth, which acts more like a milling cutter or broaching cutter than a file, and is used for dressing brass, aluminum, copper, zinc, etc. The file assortment permits use on any metal or alloy, plastics, fibers or wood.

These specially constructed file bands are really inexpensive in use because they are said to last two or three times as long as conventional files, the principle of the band being to cut in one direction only and thus eliminating the possibility of dulling on a back stroke. The band files exert a steady pressure and all of their surface is used evenly, not merely an area in the center.

A 2" up-and-down adjustment by means of a convenient hand wheel allows for a quick change of file bands to suit the job to be filed.

The machine will file a straight and smooth surface up to 5½" thick, is portable, stands 32" high, weighs 150 pounds and may be placed on any strong bench, or a base is available for a small additional charge.

Detailed information may be had by writing Continental Machine Specialties, Inc., 1301 Washington Avenue, Minneapolis, Minnesota, for Bulletin TD-73.

New Holo-Krome Price List

A SUPPLEMENT which lists new prices on Hollow Set Screws and Socket Head Cap Screws has been issued by The Holo-Krome Screw Corporation. 303 sizes of hollow set screws which heretofore were considered as special and thus subject to a setup charge are now included as standards; 19 standard sizes are eliminated because of insufficient demand; 12 sizes of socket head cap screws formerly special are now standard with resultant reduction in prices. The company's socket screw wrench sets are also illustrated and described as well as several other items. Write The Holo-Krome Screw Corporation, Hartford, Connecticut, for price list TD-381 to supplement catalog TD-211 recently reviewed in The Catalog Review.

"When The Chickens Come Home To Roost"

THAT'S the name of a recent bulletin of the Danly Machine Specialties, Inc. "The little gray hens of useless expense quickly come home to roost when play starts between guide posts and bushings of a die set. For play in a die set means shearing—shearing means regrinding—if not a production tie-up or complete ruin of the die." There are two large press setups illustrated. One shows a 14 stage double follow die, the other a die which must maintain accuracy and smooth operation under heavy-duty service, the thickness of the steel being sometimes as thick as ⅝". The bulletin is a supplement to the Danly catalog TD-106. Write Danly Machine Specialties, Inc., 2121 South 52nd Avenue, Chicago, Illinois, for bulletin TD, as well as the catalog previously reviewed.

Doall Contour Machine

(Continued from page 26)

vides a 30 to 1 infinitely variable speed change which in turn makes it possible to obtain speeds from 50 to 1500 feet of blade travel per minute.

For additional information write direct to Continental Machine Specialties, Inc., 1300 So. Washington Avenue, Minneapolis, Minn.

DE-STA-CO ARBOR SPACERS

They save time in setting up cutters on milling machines and other tools. Will help you get work out quicker. Low in cost, but high in savings. Standard stock sizes from .001" to .125" thick. Also specials up to 4.000".

TRIAL ASSORTMENT

Enough spacers for average use on one machine, sent for $1.00. Give arbor size when ordering.

Price list No. 70 sent free

DETROIT STAMPING CO.
3443 Fort St., West, Detroit, Mich.

When you order or write about products described in TDM PROGRESS please mention the publication.

Buy With Confidence

● This directory of products lists for ready reference the names of manufacturers and dealers whose sales to Tool·Die·Machine PROGRESS readers have established them as dependable in every sense of the word. They merit your consideration.

● Complete information about any product may be had upon request made to the firm listed or to us.

● Your mention of Tool·Die·Machine PROGRESS will be appreciated.

ABRASIVE PAPER AND CLOTH
Carborundum Co., Niagara Falls, N. Y.

AIR CONDITIONING APPARATUS
Buffalo Forge Co., 477 Broadway, Buffalo, N. Y.

ASSEMBLING MACHINES—Automatic
Sommer & Adams Co., The, 18511 Euclid Ave., Cleveland, Ohio.

BARS—Rolled Composite
Forging and Casting Corp., Ferndale (Detroit), Michigan.

BENDING MACHINES—Special
McKinney Tool & Mfg. Co., The, 1688 Arabella Rd., Cleveland, Ohio.

BENDING MACHINES—Angle Iron
Buffalo Forge Co., 477 Broadway, Buffalo, N. Y.

BOLTS—Stripper
Danly Machine Specialties, Inc., 2121 So. 52nd Ave., Chicago, Ill.

BORING HEAD
F. A. Maxwell Co., 310 Broadway, Bedford, Ohio.

BUSHINGS—Die
Acme Industrial Co., 206 No. Laflin St., Chicago, Ill.
Danly Machine Specialties, Inc., 2121 So. 52nd Ave., Chicago, Ill.

BUSHINGS—Drill Jig
Acme Industrial Co., 206 No. Laflin St., Chicago, Ill.
Colonial Bushings, Inc., 147 Jos. Campau Ave., Detroit, Mich.

CASTINGS— Nitri-Cast-Iron, Air and Oil Hardening Tool Steel Cast to Shape
Forgings & Casting Corp., The, Ferndale (Detroit), Mich.

CASTINGS—Strenes Alloy
Advance Foundry Co., 100 Parnell Ave., Dayton, Ohio.

CHROME PLATING—Dies and Machine Parts, New and Worn
Master Chrome Service, Inc., 5611 Herman Ave., N.W., Cleveland, Ohio.

CLAMPS—Die
Danly Machine Specialties, Inc., 2121 So. 52nd Ave., Chicago, Ill.

CLAMPS—Toggle
Detroit Stamping Co., 3443 West Fort St., Detroit, Mich.

CONTOUR METAL-WORKING MACHINES
Continental Machine Specialties, 1301 S. Washington Ave., Minneapolis, Minn.

COUNTERBORES
Putnam Tool Co., 2985 Charlevoix Ave., Detroit, Mich.

CRANKSHAFTS—Heat Treated for Presses
Enterprise Machine Parts Corp., 2731 Jerome Ave., Detroit, Mich.

CUT-OFF WHEELS
Carborundum Co., Niagara Falls, N. Y.

CUTTERS—Milling
Putnam Tool Co., 2985 Charlevoix, Detroit, Mich.
Weldon Tool Co., The, 3000 Woodhill Rd., Cleveland, Ohio.

CUTTER GRINDERS—Universal and Standard
H. P. Preis Engraving Machine Co., 155-157 Summit St., Newark, N. J.

CUTTING MACHINES—Hand & Power
Buffalo Forge Co., 477 Broadway, Buffalo, N. Y.

DIAMOND STONES
Carborundum Co., Niagara Falls, N. Y.

DIAMOND WHEELS
Carborundum Co., Niagara Falls, N. Y.

DIE CASTING MACHINES
Phoenix Ice Machine Co., The, 2711 Church Ave., Cleveland, Ohio.

DIE MAKERS SUPPLIES
Danly Machine Specialties, Inc., 2121 So. 52nd Ave., Chicago, Ill.

DIE MAKING MACHINES
Continental Machine Specialties, Inc., 1301 Wash. Ave., Minneapolis, Minn.
Grob Brothers, Grafton, Wis.

DIE AND MOLD COPYING MACHINES—Three Dimensional
H. P. Preis Engraving Machine Co., 155-157 Summit St., Newark, N. J.

DIE SECTIONS—Composite Steel
Forging and Casting Corp., Ferndale (Detroit), Michigan.

DIE SECTIONS—Forged
Ajax Steel and Forge Co., 205 Adair St., Detroit, Mich.
Lake Erie Forge & Machine Co., 1528 University Rd., Cleveland, Ohio

DIE SETS
Danly Machine Specialties, Inc., 2121 So. 52nd Ave., Chicago, Ill.

DOWEL PINS
Acme Industrial Co., 206 No. Laflin St., Chicago, Ill.
Danly Machine Specialties, Inc., 2121 So. 52nd Ave., Chicago, Ill.

DRESSING STICKS
Carborundum Co., Niagara Falls, N. Y.

DRILLS
Chicago-Latrobe Twist Drill Works, 100 So. Jefferson, Chicago, Ill.

DRILLING MACHINES—Automatic
Sommer & Adams Co., The, 18511 Euclid Ave., Cleveland, Ohio.

DRILL JIG—Universal
Hartford Special Machinery Co., Hartford, Conn.

DRILL JIG BUSHINGS
Acme Industrial Co., 206 No. Laflin St., Chicago, Ill.
Colonial Bushings, Inc., 145 Jos Campau St., Detroit, Mich.

DRILL PRESSES—Single & Multiple Spindle
Buffalo Forge Co., 477 Broadway, Buffalo, N. Y.

ELEVATING TABLES—Portable
Hamilton Tool Co., The, 222 North B Street, Hamilton, Ohio.

END MILLS
Putnam Tool Co., 2985 Charlevoix, Detroit, Mich.
Weldon Tool Co., The, 3000 Woodhill Rd., Cleveland, Ohio.

ENGRAVING MACHINE — Pantographic
H. P. Preis Engraving Machine Co., 155-157 Summit St., Newark, N. J.

FILES—Hand
Grobet File Corp. of America, 3 Park Place, New York, N. Y.

FILES—Rotary
Grobet File Corp. of America, 3 Park Place, New York, N. Y.
Hamilton Tool Co., The, 222 North B Street, Hamilton, Ohio.

FILING MACHINES—Continuous
Continental Machine Specialties, Inc., 1301 Washington Ave., S., Minneapolis, Minn.
Grob Brothers, Grafton, Wis.

FORGINGS—General
Ajax Steel & Forge Co., 205 Adair St., Detroit, Mich.
Lake Erie Forge & Machine Co., 1528 University Rd., Cleveland, Ohio.

FORGINGS—Water and Oil Hardening, High Speed, Special Alloy, Stainless and S.A.E. Steel
Forging and Casting Corp., Ferndale (Detroit), Michigan.

FORM TOOLS—For Screw Machines
Weldon Tool Co., 3000 Woodhill Rd., Cleveland, Ohio.

GAGES—Standard
Lincoln Park Tool & Gage Co., 1721 Ferris Ave., Lincoln Park, Mich.

GAGE BLOCKS
Ford Motor Co., Johansson Div., Dearborn, Mich.

GEARS—Special—14 to 96 D.P.—Made to Order Only
Gear Specialties, Inc., 2640 Medill Ave., Chicago, Ill.

GRINDER—Precision for Contours
Boyar-Schultz Corp., 2114 Walnut Street, Chicago, Ill.
Koestlin Tool & Die Corp., 3601 Humboldt Ave., Detroit, Mich.

GRINDER—Utility
Maxwell Company, F. A., 310 Broadway, Bedford, Ohio.

GRINDING ATTACHMENTS — For Sharpening Cutting Tools
Weldon Tool Co., 3000 Woodhill Rd., Cleveland, Ohio.

GRINDING MACHINES
Safety Grinding Wheel & Mach. Co., The, Springfield, Ohio.

GRINDING SPINDLES—Motorized
Majestic Tool & Mfg. Co., 2948 Woodbridge St., E., Detroit, Mich.

GRINDING WHEELS
Carborundum Company, The, Niagara Falls, New York.
Safety Grinding Wheel & Machine Co., The, Springfield, Ohio.

GRINDING WHEEL DRESSERS
Royal Grinding Wheel Dresser Co., Box B., Royal Oak, Mich.
Vinco Tool Co., 7352 Central Ave., Detroit, Mich.

GUIDE PINS
Acme Industrial Co., 206 No. Laflin St., Chicago, Ill.
Danly Machine Specialties, Inc., 2121 So. 52nd Ave., Chicago, Ill.

HONING STICKS
Carborundum Co., Niagara Falls, N. Y.

JIG BORING—Contract
Lyons Machine Company, 5601 Tillman Ave., Cleveland, Ohio.
Precision Boring Co., 2900 E. Vernor Highway, Detroit, Michigan.
Swiss Boring Co., 3916 Vermont Ave., Detroit, Mich.

LAPS—Copper Head Expansion
Boyar-Schultz, Inc., 2114 Walnut Street, Chicago, Ill.

LAPPING COMPOUND
Carborundum Co., Niagara Falls, N. Y.

LAPPING MACHINES
Schraner & Co., A. P., 3338 Payne Ave., Cleveland, Ohio.

LAYOUT FLUID — For Dies, Templates
The Dykem Co., 2201 No. 11th St., St. Louis, Mo.

LEADER PINS
Acme Industrial Co., 206 No. Laflin St., Chicago, Ill.

MACHINE REBUILDING
Enterprise Machine Parts Corp., 2731 Jerome Avenue, Detroit, Mich.

MACHINERY DEALERS
Brett Machinery Co., One N. Crawford Ave., Chicago, Ill.

MAGNETIC SINE TABLE
Omer E. Robbins Co., 637 Mt. Elliott Ave., Detroit, Mich.

MILLING MACHINES—Continuous
Sommer & Adams Co., The, 18511 Euclid Ave., Cleveland, Ohio.

MILLING MACHINE—Universal
H. P. Preis Engraving Machine Co., 155-157 Summit St., Newark, N. J.

MOTOR DRIVES—Individual
Berkeley Engineering Co., 1379 East 17th Street, Cleveland, Ohio.

PARALLELS
Ford Motor Co., Johansson Div., Dearborn, Mich.

PANTOGRAPH MACHINES
H. P. Preis Engraving Machine Co., 155-157 Summit St., Newark, N. J.

POLISHING & BUFFING MACHINES —Automatic Continuous
Sommer & Adams Co., The, 18511 Euclid Ave., Cleveland Ohio.

POLISHING GRAIN—
Carborundum Co., Niagara Falls, N. Y.

PUNCHES—Standard & Interchangeable
Hovis Screwlock Co., 3129 Larned St., E., Detroit, Mich.

PUNCH PRESSES
Marshalltown Mfg. Co., 913 E. Nevada St., Marshalltown, Iowa.

REAMERS
Chicago-Latrobe Twist Drill Works, 100 So. Jefferson, Chicago, Ill.
Putnam Tool Co., 2985 Charlevoix Ave., Detroit, Mich.

REAMER—Self-centering Cylinder
Royal Oak Tool & Machine Co., 621 E., Fourth Street, Detroit, Mich.

REPAIR PARTS FOR MACHINERY
Enterprise Machine Parts Corp., 2731 Jerome Ave., Detroit, Mich.

RETAINERS—Punch & Die
Hovis Screwlock Co., 3129 Larned St., E., Detroit, Mich.

RIVETING MACHINES
Buffalo Forge Co., 477 Broadway, Buffalo, N. Y.

ROLLER DIE FORMING MACHINES
McKinney Tool & Mfg. Co., The, 1688 Arabella Rd., Cleveland, Ohio.

SALVAGE—Tool-Die & Machine Parts
Master Chrome Service, Inc., 5911 Herman Ave., N.W., Cleveland, Ohio.

SAND BLASTING
Porter Steel Treating Co., The Geo. H., 1225 Marquette St., Cleveland, Ohio.

SAW & SHEAR CUT-OFF MACH.—Automatic
McKinney Tool & Mfg. Co., The, 1688 Arabella Rd., Cleveland, Ohio.

SAWING MACHINES—Continuous
Continental Machine Specialties, Inc., 1301 So. Washington St., Minneapolis, Minn.

SAWING MACHINES—Open End
Grob Brothers, Grafton, Wis.

SCREW MACHINE PRODUCTS—Contract
Star Machine & Tool Co., 9320 Woodland Ave., Cleveland, Ohio.
Ulmer Co., The J. C., 1791 East 38th St., Cleveland, Ohio.

SCREWS—Socket Head
Danly Machine Specialties, Inc., 2121 So. 52nd Ave., Chicago, Ill.
Holo-Krome Screw Corp., The, Hartford, Conn.
Strong, Carlisle & Hammond Co., 1392 West Third St., Cleveland, Ohio.

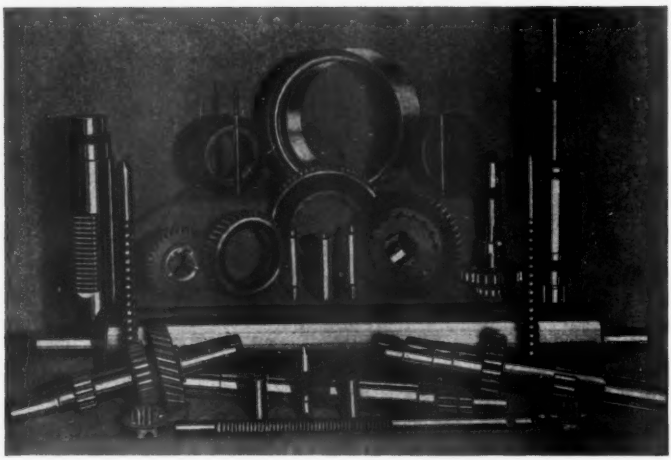
We Specialize in
HIGH GRADE DIES
Small and Medium
JIGS FIXTURES GAGES
DESIGNING LET US HELP ENGINEERING
STAMPINGS ASSEMBLIES PLATING
CEDAR 0801
THE DENNING MANUFACTURING CO.
ESTABLISHED 1903
1775-81 EAST 87TH ST. • CLEVELAND, OHIO

ALLOY HY-TEN STEELS
Immediate Shipment from Six Warehouses
ALLOY S. A. E. STEELS
Economize without decrease of quality on your water hardened tool applications with *Hy-ten "B" No. 5, a .95 carbon* water hardening steel. Bars ¼"-10" round in stock. Forgings of all types.
Send for descriptive folder
WHEELOCK, LOVEJOY & CO., INC.
CAMBRIDGE CLEVELAND CHICAGO NEWARK DETROIT BUFFALO

When you order or write about products described in TDM PROGRESS please mention the publication.

SCRIBERS
Ford Motor Co., Johansson Div., Dearborn, Mich.
SHARPENING STONES
Carborundum Co., Niagara Falls, N. Y.
SHEARS—Belt & Rivet—Automatic
Buffalo Forge Co., 477 Broadway, Buffalo, N. Y.
SINE BARS
Ford Motor Co., Johansson Div., Dearborn, Mich.
SPACERS—For Milling Machine Arbors
Detroit Stamping Co., 3443 West Fort St., Detroit, Mich.
SPACING FIXTURES
Hartford Special Machinery Co., Hartford, Conn.
SPRINGS—Die
Danly Machine Specialties, Inc., 2121 So. 52nd Ave., Chicago, Ill.
STAMPINGS
Barth Stamping & Mach. Works, W. 34th & Denison, Cleveland, Ohio.
Boehm Pressed Steel Co., The, 2225 West 63rd St., Cleveland, Ohio.
Davis Tool & Engineering Co., 6481 Epworth Blvd., Detroit, Mich.
Denning Mfg. Co., The, 1775-81 E. 87th St., Cleveland, Ohio.
Detroit Stamping Co., 3443 West Fort St., Detroit, Mich.
Modern Tool & Die Co., P. O. Box 2741, Cleveland, Ohio.
Rockford Die & Tool Wks., Inc., 1816 Seventeenth St., Rockford, Ill.
Star Machine & Tool Co., 9320 Woodland Ave., Cleveland, Ohio.
Star Tool & Die Works, 2522 24th St., Detroit, Mich.
Ulmer Co., The J. C., 1791 East 38th
Variety Machine & Stamping Co., The, 12695 Elmwood Ave., Cleveland, Ohio. St., Cleveland, Ohio.
STEEL—Alloy
Columbia Tool Steel Co., 410 East 14th St., Chicago Heights, Ill.
Darwin & Milner, Inc., 1258-64 West Fourth Street, Cleveland, Ohio.
Wheelock-Lovejoy & Co., Inc., 130 Sidney St., Cambridge, Mass.
STEEL—Carbon
Columbia Tool Steel Co., 410 East 14th St., Chicago Heights, Ill.
Darwin & Milner, Inc., 1258-64 West Fourth Street, Cleveland, Ohio.
STEEL—Chromium
Darwin & Milner, Inc., 1258-64 West Fourth St., Cleveland Ohio.
STEEL—"Cobalt"
Darwin & Milner, Inc., 1258-64 West 4th St., Cleveland, Ohio.
STEEL—High Speed
Ajax Steel & Forge Co., 205 Adair St., Detroit, Mich.
Columbia Tool Steel Co., 410 East 14th Street, Chicago Heights, Ill.
Darwin & Milner, Inc., 1258-64 West 4th St., Cleveland, Ohio.
STEEL—Stainless
Ajax Steel & Forge Co., 205 Adair St., Detroit, Mich.
STEEL—Tool & Die
Columbia Tool Steel Co., 410 E. 14th St., Chicago Heights, Ill.
Darwin & Milner, Inc., 1258-64 West 4th St., Cleveland, Ohio.
Wheelock-Lovejoy & Co., Inc., 130 Sidney St., Cambridge, Mass.
STEEL PLATE—Rough or Machined Torch Cut Shapes
Danly Machine Specialties, Inc., 2121 So. 52nd Ave., Chicago, Ill.
STEEL TREATING—Hardening
Porter Steel Treating Co., The Geo. H., 1225 Marquette St., Cleveland, Ohio.
STRAIGHT EDGES
Ford Motor Co., Johansson Div., Dearborn, Mass.
STRAIGHTENING MACHINES
Buffalo Forge Co., 477 Broadway, Buffalo, N. Y.
TAPPING MACHINES
Buffalo Forge Co., 477 Broadway, Buffalo, N. Y.
TOOLS—Carboloy
Lyons Machine Co., 5601 Tillman Ave., Cleveland, Ohio.
TOOL CHESTS
Gerstner Tool Chests, 56 Columbia St., Dayton, Ohio.
TOOL HEAD—Universal
Precision Tool Co., The, Bridgeport, Conn.
TOOL HOLDERS
Weldon Tool Co., The, 3000 Woodhill Rd., Cleveland, Ohio.
TUBING—Tool Steel
Bissett Steel Co., The, 947 E. 67th St., Cleveland, Ohio.
VENTILATING APPARATUS
Buffalo Forge Co., 477 Broadway, Buffalo, N. Y.
WASHERS—Special
Detroit Stamping Co., 3443 West Fort St., Detroit, Mich.
WELDING
Danly Machine Specialties, Inc., 2121 So. 52nd Ave., Chicago, Ill.
Overly-Hautz Co., 1621 West 116th St., Cleveland, Ohio.
Star Tool & Die Works, 2522 24th St., Detroit, Mich.

HARD CHROME *for* LONGER LIFE



- New and salvage work on gauges, dies and machine parts.
- Ask for interesting 16 page catalog or to have representative call.

MASTER CHROME SERVICE

INCORPORATED
DIVISION OF MASTER TOOL COMPANY, INC.
5611 Herman Ave., N. W. Tel. WOodbine 2012 Cleveland, Ohio

When you order or write about products described in TDM PROGRESS please mention the publication.

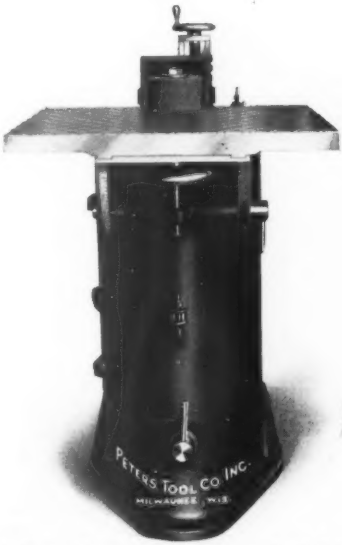
Vertical Oscillatory Grinder of Particular Value for Tool and Die Work

A Vertical Oscillatory Grinder, designed primarily as a standard tool for the accurate grinding and stoning of tools and dies, is announced by the Peters Tool Company.

Simple in operation, the Peters grinder does not require a skilled operator. Its short oscillatory movement intended to eliminate abrasive lines in ground parts is said to assure square surfaces and smooth finishes. The grinder is adjustable to any required angle and may be used on form tools including tungsten carbide.

When form wheels are to be used or it becomes necessary to dress the grinding wheel the oscillatory movement is readily eliminated by a single lever for that purpose. All bearings and wearing surfaces are enclosed and the adjustable taper bearings have large oil chambers. The oscillatory mechanism itself runs in oil.

The Peters grinder has been designed to occupy comparatively small floor space, the base being approximately 24" x 34". It weighs less than 1,000 pounds complete, is powered with a 1½ HP 220 V Allis-Chalmers ball bearing AC motor. Double texrope drive is used and the grinding wheel attains a speed of 5,000 RPM.



A descriptive circular may be had by writing Peters Tool Company, Inc., 118 Scott Street, East, Milwaukee, Wisconsin.

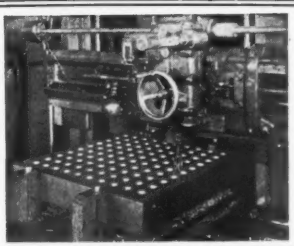
THE GEO. H. PORTER STEEL TREATING CO.

Tool Work Our Specialty

- *Heat Treating*
- *Annealing*
- *Carburizing*
- *Case Hardening*
- *Sand Blasting*

1225 Marquette St. Tel. HEnderson 6601 Cleveland, Ohio

Write or phone for our copyrighted Hardness Conversion Chart



Precision Boring on
LATEST TYPE EQUIPMENT
Exclusively

SWISS BORING CO.
EST. 1929
3916 VERMONT AVE. DETROIT, MICH.
TEL. TEMPLE 1-1535
We do not compete with TDM Industry Shops

When you order or write about products described in TDM PROGRESS please mention the publication.

(Continued from page 33)

people were killed by horse and buggy runaways, and nobody went anywhere. Now we kill a lot of people because everybody goes everywhere.

Would it surprise you if I told you that the lowest rate of insanity in America is among the machine workers of America? That is true. You can't go crazy around a machine and stay that way long. There is something challenging about a machine. You ask what is the highest rate of insanity? Ah! among the women of the fourteen southeastern states. Where are they from? Not the cities, oh no; the farms. Why are they there? Ninety per cent of them because of melancholia. The very lonesomeness of the farm life deranges them. When I heard that, I understood what old Glenn Burke meant in Pike County, Kentucky. He took his wife to the insane hospital in Western Kentucky and said, "Here she is, Doctor, she's crazy as she can be. I don't ever know what made her go crazy because she ain't been off the farm for twenty-six years."

This argument could go on indefinitely along these lines. The machine does not make people sick, it does not run them crazy, and we are not a nation of machine tenders. Would it surprise you if I told you that less than four per cent of the working population of America work with or about machines? That is statistically true.

Somebody said, "It puts people out of work." Philosophically this is the glory of the machine, not that it puts men out of work numerically but abolishes labor. That is all it does; it releases masses for cultural pursuits for the first time in the history of mankind. What is it Bertrand Russell says? "Any time prior to the invention of the steam engine, 90 per cent of the waking hours of 90 per cent of all populations on the planet devoted 90 per cent of those waking hours to the getting of food, clothing and shelter; scanty food, poor clothing, and miserable shelter at that." That is exactly what happened. Now that the machine has come, we have released masses all over this western civilization of ours for eight hours of leisure, for recreation and cultural life. But that it throws men out of work numerically just can't be quite proved by statistics.

Would it surprise you if I told you that in England in 1790 it took 700 men to weave as much cloth as one man could weave in 1856? That is so. Somebody said, "What did you do with the 699?" Well, that is a good question, but only a light-minded person would stop for the asking of it. I found that in 1790 there were 124,683 people working in the textile business in England. One hundred years later, in 1890, after Arkwright and Hargreaves had gotten busy and perfected the knitting and weaving machinery, while the population doubled, the number of people brought into the textile industry in England quadrupled, grew twice as fast as the populational increase would have led one to expect. You say, "How on earth is that possible when it took 700 men in 1790 to weave as much cloth as one man could weave in 1856?" It is very simple. The Englishmen were teaching savages to wear pants and then weaving the pants, you see.

Somebody said, "That is just the textile industry." I thought you might say that, so I looked it up for the fourteen major engineering trades in England, and I found the same thing, except that for some it went up six times as fast as the populational increase would lead you to believe. Printing: Not many were reading in 1790, but with the development of printing machinery and cheap printing, multiplicity of books, magazines and papers, everybody started reading, and in spite of the increase in the production of the machine it took six times as many people in 1890 to print the stuff as it did in 1790 because nothing was being printed, to speak of, in that day. That is the situation, and that holds with reference to the fourteen major engineering trades all over England.

I have figures I could give you no end, but in the tool trades, in shipbuilding, in hat making, in jewelry making, in textile work, in all of the major industries of England, these figures hold.

Here in our own country, between 1870 and 1930 (I use those figures because you can get government reports on them and because that is the period of our most rapid technological development) our population increased 218 per cent in those sixty years. Would it surprise you if I told you that was twenty times as fast as populations ever grew anywhere else in the world? That is so. In spite of that, the gainfully employed increased 291 per cent right at the period when we were making our most rapid technological development. Would it surprise you if I told you that more people are gainfully employed in 1930 than was true of 1870, 1880, 1890, 1900, 1910? That is what our census shows.

Would it surprise you if I told you that in 1875 only 324 people out of each thousand were gainfully employed, and in 1900 383 out of every thousand, and between 1900 and 1930, that is the thirty-year period of our most rapid technological development, we created 20 millions of new jobs and that now one workman out of every seven is making things his father never saw if he is past fifty-five, and one man out of every four is making things his grandfather never saw if he is past sixty. It is just the new jobs we have created, that is all.

One infinite thing is human want, and as human want grows this machine must continue to supply the demands or we can't possibly live under our present standards.

Then somebody said, "Well, growing occupations add new workmen." Yes, if they are mechanized. All the occupations in the country that are not mechanized are losing labor all the time. I have in my office over at Detroit an advertisement of a car of 1912; it is on a full page of the New York Times. It says, "This is a good automobile, price $5500, weight 4800 pounds," and then the impelling selling sentence in big block letters an inch high: "This is a good automobile. It has been known once to go 70 miles without a breakdown." What happened to the cars in those days? They were just playthings for rich men who had

(Continued on page 46)

Gopher Counterbore Sets Now Available For Distribution

A COUNTERBORE for standard socket head screws which is free cutting, easy to sharpen and of long life was developed by, and used exclusively in toolroom work over a period of fifteen years by The Gopher Machine & Tool Works, who are now making its advantages available to other users.

The free or fast cutting action of this counterbore is due to its two-lipped construction and "quick lead" or spiral. Its one-piece construction with a solid pilot give it unusual rigidity and strength and make it possible to "hog-out" the toughest of materials.

With only two cutting lips to re-grind, plus the simple circular grinding job on the two spirals, sharpening is reduced to two easy and quick grinding set-ups.

The large amount of "over-size" allows many re-grindings before the counterbore is reduced to sub-standard dimensions, which results in an exceptionally long-lived tool.

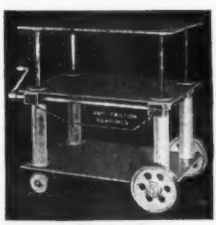
Tool and Die Makers will be interested in a chart which, in addition to illustrating the Counterbore, contains tables of spindle speeds for counterboring various diameters in materials of different

hardnesses, and of punch and die clearances which should be observed for different thicknesses of a variety of materials. This chart may be had upon request to The Gopher Machine and Tool Works, Inc., 55 Royalston Avenue, Minneapolis, Minnesota.

Saves Hours of Set-up Time
•
Accurate to Precision Limits

The MAGNA-SINE
A Magnetic Sine Table Adjustable to ANY DESIRED GRINDING POSITION
OMER E. ROBBINS COMPANY
637 Mt. Elliott Ave. Detroit, Mich.

Move heavy dies, jigs and fixtures more quickly, economically and safely *with the*
HAMILTON PORTABLE ELEVATING TABLE


(Patented)

Eliminates costly mishaps and breakage . . . Is a labor saver because it requires only one man to handle . . . Levels and supports overhanging pieces of work . . . Safe—Indispensable—Inexpensive . . . Two Sizes: 2,000 pounds and 5,000 pounds.

Write for circular and prices
THE HAMILTON TOOL COMPANY
222 North B Street Hamilton, Ohio

When you order or write about products described in TDM PROGRESS please mention the publication.

CLEVELAND Tool · Die · Machine CONTRACT SHOPS

BARTH STAMPING & MACH. WORKS
W. 34 & DENISON SHa. 1857
DIES—TOOLS—JIGS—MOLDS
GLENN A. BARTH THOM. A. BARTH
J. A. BARTH J. J. BARTH

***THE BUNELL MACHINE & TOOL CO.**
1600 East 24th St. PRospect 2681
JIGS—FIXTURES—GAGES—MODELS
Blanking, Forming, Drawing, Piercing
Trimming, Bending and Coining Dies
Special Tools and Machinery

CLEVELAND UNIVERSAL JIG COMPANY
13404 St. Clair Ave. MUlberry 3322
Designers and Builders
Jigs & Fixtures Special Machines
Production Engineering
COMPLETE PLANT ROUTING and TOOLING

***THE DENNING MANUFACTURING COMPANY**
1775-81 East 87th St. CEdar 0801
Designers and Builders
HIGH GRADE DIES

HAHN MANUFACTURING COMPANY
5332 Hamilton Ave. ENdicott 2205
Modern equipped shop for building of
MEDIUM AND LARGE
DIES, TOOLS, SPECIAL MACHINERY
Equipment includes:
3" and 5" spindle Horizontal Boring Mills
Large planers Vertical Mill

THE INDUSTRIAL MACHINE CO.
1436 East 47th Street Founded in 1903
Builders of Special Machinery
GENERAL MACHINE WORK

***LYONS MACHINE COMPANY**
5601 Tillman Ave. WOodbine 2440-2441
Manufacturers Special Machinery
Tools, Jigs, Fixtures Tungsten Carbide Tools
SWISS JIG BORING

THE McKINNEY TOOL & MFG. CO.
1688 Arabella Rd. KEnmore 1681
Roller Die Forming Machines
Automatic Saw and Shear Cut-off Machines
Special Machinery—Dies, Jigs and Fixtures

MODERN TOOL & DIE CO.
P. O. Box 2741
West Park Branch CLearwater 6149
DESIGNERS AND BUILDERS
Tools & Dies *Special Machinery*
STAMPINGS

***OHIO TOOL COMPANY**
3160 West 106th St. CLearwater 3200
Designers and Builders
SHEET METAL DIES, TOOLS, SPECIAL MACHINERY, DIE CASTING DIES, RUBBER MOULDS
●
Modern Facilities
150-Man Shop

THE PARAMOUNT TOOL CO.
1392-98 East 43rd St. ENdicott 2220
JIGS, FIXTURES, DIES
Experimental Work

The PHOENIX ICE MACHINE COMPANY
2711 Church Ave. CHerry 1048
GRINDERS
12" by 100" Cylinder
16" by 36" Surface
Let us figure

A. P. SCHRANER & COMPANY
3338 Payne Ave. HEnderson 8644
EXTERNAL CYLINDRICAL
LAPPING MACHINES
Special Machinery
TOOLS, DIES, JIGS, FIXTURES

***THE SOMMER & ADAMS CO.**
18511 Euclid Ave. KEnmore 0810-0811
DESIGNERS AND BUILDERS
Special Machinery
TOOLS, JIGS and FIXTURES

*See larger display advertisement also.

When you order or write about products described in TDM PROGRESS please mention the publication.

CLEVELAND Tool · Die · Machine CONTRACT SHOPS

STAR MACHINE & TOOL CO.
Established 1903
9320 Woodland Ave. GArfield 2060
DIES - JIGS - FIXTURES
Special Machines
JIG BORING with
Pratt & Whitney Precision Equipment
NEW OPENSIDE PLANER EQUIPMENT
12 ft. x 48" Capacity

TOOLS & GAGES, Inc.
3106 East 63d St. MIchigan 7230
"Let us be your tool room."
DESIGNERS AND BUILDERS
Tools, Gages, Dies, Jigs, Fixtures
Special Machinery
SWISS JIG BORING
DIE CASTING DIES

THE J. C. ULMER COMPANY
1791 East 38th St. HEnderson 4601
Tools, Dies, Jigs, Fixtures
Special Machinery *Designing and Building*
Experimental, Model, Punch Press and Screw Machine Work

THE VARIETY MACHINE & STAMPING COMPANY
12695 Elmwood Ave. LAkewood 8433
Designers and Manufacturers
DIES, METAL STAMPINGS
250 tons capacity

Dayton, Ohio

***THE INTERNATIONAL TOOL CO.**
434-438 East First St.
Manufacturers and Engineers
Dies, Jigs, Fixtures, Gages
Special Machinery, Machine Work, Designing

Hamilton, Ohio

***THE HAMILTON TOOL COMPANY**
220-222 North B Street
Designers and Builders of
Tools, Dies, Jigs, Fixtures, Special Mach'y
The Hamilton Portable Elevating Table

*See larger display advertisement also.

DETROIT Tool · Die · Machine CONTRACT SHOPS

DAVIS TOOL & ENGINEERING COMPANY
6481 Epworth Blvd. TYler 46070
TOOLS and DIES
Special Machinery
Sheet Metal
Stampings and Assemblies

***ENTERPRISE MACHINE PARTS CORP.**
Jerome Ave. at McNichols Rd. E. LOngfellow 9643-4
Manufacturers of
PRODUCTION MACHINE REPAIR PARTS
Motor Drives, Gears, Worms, Tools, Fixtures
Machine Overhaul Specialists

THE INTERSTATE TOOL COMPANY
19636 Mitchell Ave. TOwnsend 84853
Manufacturers — Engineers
Dies, Jigs, Fixtures, Gauges
Special Machinery *Machine Work*

***KOESTLIN TOOL & DIE CORPORATION**
3605 Humboldt Ave.
Manufacturers
Sheet Metal Dies "Grindrite" Die Grinders

MAJESTIC TOOL & MFG. COMPANY
2948 Woodbridge St., East FItzroy 1011
Manufacturers
General line of Tool and Die Work, Tool Details, Parker High Speed Grinding Spindles

NORTHEASTERN ENGINEERING CO.
3125 E. Larned St. FItzroy 1275
Specialists in the Designing and Building of Progressive Dies
Dies—Tools—Special Machinery

***OMER E. ROBBINS COMPANY**
637 Mt. Elliott Ave. FIzroy 4740
Designers and Manufacturers
Tools, Dies, Jigs, Fixtures
Special Machinery and Experimental Work

ROYAL OAK TOOL & MACHINE CO.
621 E. Fourth St. ELmhurst 6580
Royal Oak, *Manufacturers of*
Mich. Tools, Dies, Jigs, Fixtures
Special Machinery and Designing
Hoch Self-Centering Cylinder Reamers

STAR TOOL & DIE WORKS
2522-24th St. LAfayette 1716
BUILDERS of DIES
Facilities for the Largest
MANUFACTURERS
of STAMPINGS

*See larger display advertisement also.

When you order or write about products described in TDM PROGRESS please mention the publication.

(Continued from page 42)

two or three mechanics to go with them down the street. Only a few men could have them. What has happened since? Mechanization has reduced the price six times, cut the weight in half, and made it forty times as efficient, and 25 millions of them are on the roads. What does that prove? Nearly ten times the proportion of our population today are making transportation equipment as ever worked at it in the horse and buggy days.

A man said to me the other day, "I saw one road machine down here with twenty men, laying as much concrete in a day as sixty men used to lay. What are you doing with the other forty men?" Six times the proportion of our population are building roads as ever did before. I have figured out how many men it would have taken to build all the concrete roads we have built since 1914 to 1930, and if we had done it by the old pick and shovel method it would have taken a fourth of our total population to lay the roads, which means we couldn't have had them at all. We are working more people, building roads and transportation equipment, in proportion to our population than was ever true before in the history of the world. So the machine has not put people out of work in that field. It has put them back to work.

Think of all the shoes, the clothes, all the things we ought to have. Production is the interesting phase of wealth creation. The only wealth we have I guess, economically speaking, is that which we produce out of nature's laws, and all the machine has done is to compress these laws and make it possible for fewer men to work fewer hours? Oh no, more men working fewer hours to make more stuff to satisfy this insatiable want of humanity.

The only reason that an American buys more than a Chinaman is because he produces more. If he ever stops producing more I have a suspicion he will stop buying more. That is an interesting thing for us to think about.

All through, this story runs. I have the statistics here for the various callings, the various occupations, and I can't find any statistics at all to prove that the machine throws people out of work, if you consider any reasonable period of time involved in the matter. Now and then a man will lose a job because a new machine comes along, but that is the law of progress. Our custom is not to fuss at the machine which has given this mass man, for the first time in the history of the world, leisure for his cultural and recreational life, but to teach that occasional man thrown out of a job to do something else and go on with it. The progress of the human race from the cave man to now has been marked by the perfection of the tool with which he does the work of the world. Neighborhoods are worldwide, and things that we used to think of in terms of community gossip are now worldwide, and thus community problems have become worldwide problems. Those are things that we must think about.

Psychologically, too, there is something to be said in favor of the machine. In order to work about a machine you must be alert, observant, full of action, but it gives comfort and it gets efficiency. The individual's reaction to the machine is tremendously important.

There is a large amount of loose criticism of the machine which is not based on any statistical facts that I can find at all. We live in a day of terrific indictment. I think our solutions are correspondingly weak, and for the reason that we are indicting the wrong things. It is very important if you are going to bring an indictment that you pick out the right culprit. The machine has been the most beneficial thing that has come to the working man on this planet, and the working man who apparently is least informed about it is the fellow who has reaped the greatest benefit from it.

I can remember when fourteen hours was a common day for a lot of labor, and all of you can remember when the twelve-hour day in the steel mills was common. In 1810, eighteen hours was a legal day in England. They cut that down form eighteen to fourteen and then to twelve and then down to ten and then down to eight, and I don't know how far it will go and I don't care. If we are intelligent enough to adjust our economic system as we go along and let this thing create ever and ever more wealth, (that is the only way we will get more wealth) the time might come when we could work seven hours a day or even six and produce all of the things we need and want. But it can't come unless we understand it, and I suggest to you that the jump from an eighteen-hour day in 1810 to an eight-hour day in 1938 is a smaller jump than from an eight-hour day down to a six-hour day. But it cannot come unless we understand the beneficent, even the benign, work that the machine has done for the man who labors.

There were 17 million people in the Periclean age in Greece; 12 million of them were white human slaves and they worked eighteen hours a day. Some of them were relatively free, a beekeeper here, a marble worker there, a farmer there, a shipper here, a tradesman yonder. Only 8000 people, according to the maximum estimates, in Athens were at all interested in the cultural life of Greece. I submit to you that any culture prior to the invention of the steam engine was an aristocratic culture, definitely so, and for the first time in the history of the world the machine has made it possible for us to have a democratic culture, provided we are smart enough to see it.

A lot of people seem to think the world is finished. They seem to think the best poems have been written, the best music composed, the best art painted and the best statues carved. If I believed that, I would quit teaching school tomorrow morning. My hope is that if we can take this eight hours of waking leisure we have given all men, except some of you fellows who work fourteen and sixteen hours a day now, and teach them to use even four hours of it for interested, intelligent, actual work on creative hobbies, we would have a renaissance the like of which the world never saw. I believe that is possible, because I believe we are not working with a universe that will let us down as long as we play our part.

One of our dangers just now is that we have about converted the country into a debating society, and the subject is: Who will not do the work? What we need to do is to use this machine and use our brains to couple this thing up and keep the balance and go along. We have a very nice civilization started here and I would like to see it go ahead.

I wonder if I might venture this suggestion: that democracy itself is nothing more nor less than intelligent compromise. We have three classes in all societies: the group out there that want to go so fast they wear their institutions out before they ever have time to function in the social order of which they are a part; here is a group that want to stand so still they find themselves defending a castle in which nobody but they live. They want no experimentation with their institutions. They are both wrong. I have friends in both groups. I listen to them and I like them—some of them. But here they are, and they are the extremes, these fellows over here who are the standstillers, and these fellows over here who are the go-aheaders so fast that you can't keep up with them and the minute you move up they move up. Well, that is all right, but you don't want to go so fast you wear out your institutions.

Somewhere here in the middle is a great group of people in any democracy which believes that you have some intelligent compromise to work out and if you can do it you will save your situation. With thinking men and with patriotic men and with men who love their country and with men who are willing to compromise and accept the active element in democracy, take all the opinions one can have and pass them through the alembic of compromise, you distill something and preserve this magnificent civilization we have started here in the United States.

TOOLS · GAGES
JIGS · FIXTURES
SPECIAL MACHINES

correctly built from your designs

● **Our engineers are qualified to lay out complete tooling programs economically.**

Let us estimate your requirements.

* * *

We have successfully served the automobile industry for more than 18 years, an experience which is of great value to every user of tools, jigs, fixtures and machines of special design.

WE MERIT YOUR CONFIDENCE

THE SOMMER & ADAMS CO.

18511 EUCLID AVENUE — CLEVELAND, OHIO

Builders also of S & A Continuous Milling, Drilling and Polishing Machines

Representatives

JOHN F. LIVINGSTONE & CO.
2921 E. Grand Blvd., Detroit

P. W. FRANKFURTER
4623 Morris Street, Philadelphia

JOHN E. LIVINGSTONE & CO.
Windsor, Ontario

CONTINENTAL
★BAND FILER

BRAND NEW . . . AND

only $88.00

Just think of this—a really efficient continuous filing machine at a sensationally low price! For faster, better, smoother work on all metals, alloys, plastics, fiber, wood, etc.

The file segments automatically interlock and form a rigid file before they reach the work. Filing is in one direction only, prolonging file life and producing an exceptional job.

13 standard file bands are available for best work on various materials, from toughest high carbon steel to copper, brass, etc.

It's sturdy.
Weighs 150 pounds.
Portable. Place on any work bench.
32" high.
Operated by any ¼ HP motor (not included).

Every machine shop, model and tool room and metal worker can save time and money with this remarkable performance machine.
Get a demonstration from your dealer or order on 10-day Free Trial. Circular on request.

SEE HOW THE FILE BAND WORKS.

CONTINENTAL MACHINES, INC.
1300 S. Washington Ave.,
Minneapolis, Minn.

TDMP-6

☐ Send Continental Filer on 10-Days Trial.

☐ Send Circular.

Name _____

Address _____